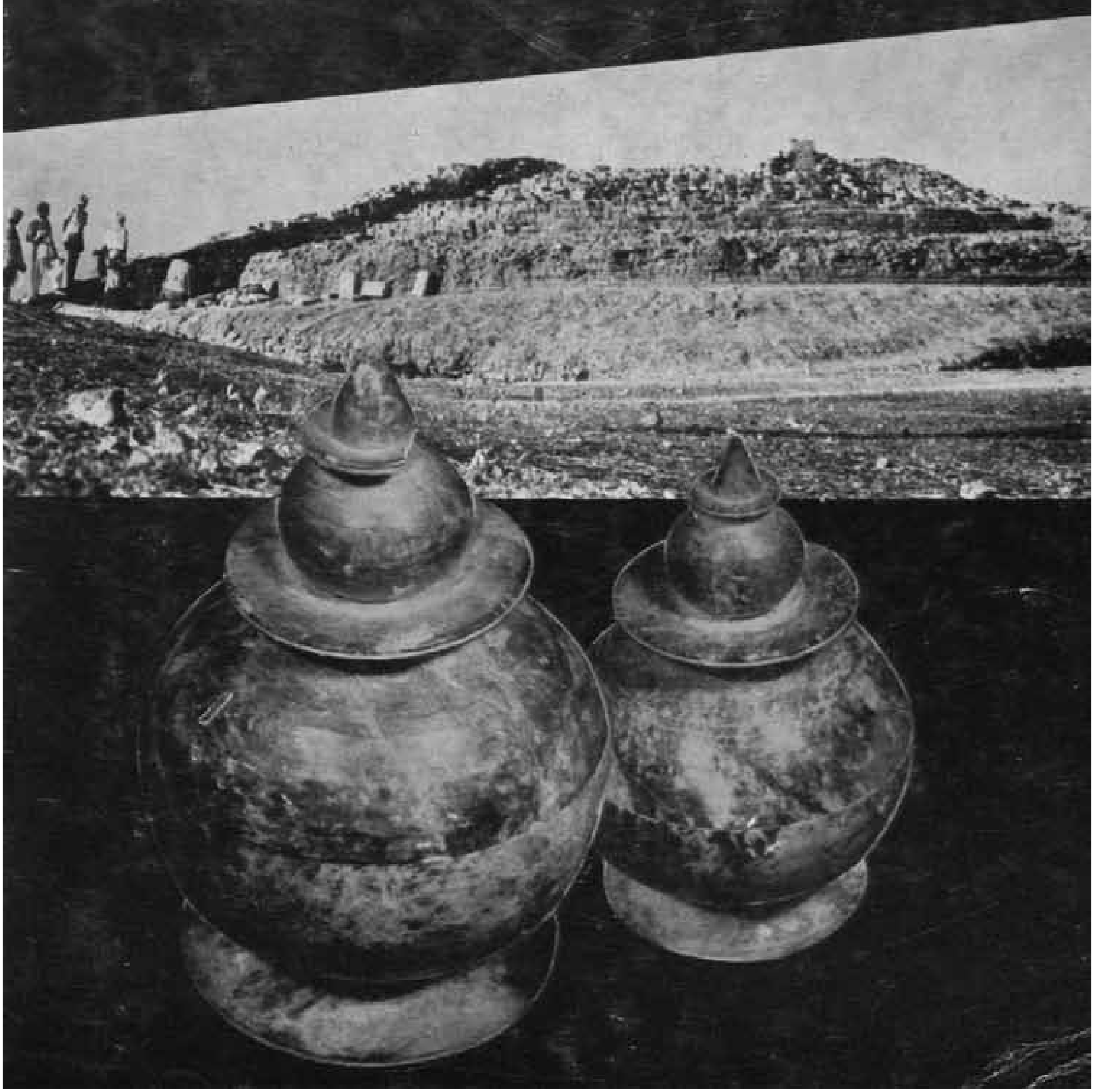
Indian Archaeology

1972-73 A REVIEW



INDIAN ARCHAEOLOGY 1972-73
—A REVIEW

EDITED BY

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Director General

Archaeological Survey of India

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PREFACE

Due to certain unavoidable reasons, the publication of the present issue has been delayed, for which I crave the indulgence of the readers. At the same time, I take this opportunity of informing the readers that the issue for 1973-74 is already in the Press and those for 1974-75 and 1975-76 are press-ready. It is hoped that we shall soon be up to date in the publication of the *Review*.

As already known, the *Review* incorporates all the available information on the varied activities in the field of archaeology in the country and as such draws heavily on the contributions made by the organizations outside the Survey as well, viz. the Universities and other Research Institutions, including the Physical Research Laboratory, Ahmadabad and the Birbal Sahni Institute of Palaeobotany, Lucknow, and the State Departments of Archaeology. My grateful thanks are due to all contributors, including my colleagues in the Survey, who supplied the material embodied in the *Review* as also helped me in editing and seeing it through the Press.

M. N. DESHPANDE

New Delhi
1 October 1978

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INDIAN ARCHAEOLOGY 1972-73

-A REVIEW

I. EXPLORATIONS AND EXCAVATIONS

ANDHRA PRADESH

1. EXPLORATION IN DISTRICT EAST GODAVARI.—Dr T. V. G. Sastri of the South eastern Circle of the Archaeological Survey of India[1] located an ancient mound at Moral, Taluk Peddapuram. The mound shows a thin layer, yielding the megalithic Black-and-red Ware in the lower levels and a thick deposit, yielding medieval red and grey wares in the upper.

2. EXCAVATION AT GOLCONDA, DISTRICT HYDERABAD.—The Department of Archaeo logy, Government of Andhra Pradesh, resumed its fifth field-season of excavation on the northern and north-eastern side near Qutb Shahi Tombs at Golconda. The excavation laid bare many important structures like ware-house (pl. IA), residential quarters, palace complex, military quarters, assembly hall, cemetery and a net work of conduit pipes connected with hydrants at regular intervals.

On the southern side of the main mosque, the excavation revealed another three rooms, which were provided with independent entrances facing south. All the rooms were nicely plastered with lime. Prefacing one of the rooms was found a soakage pit meant for the locality.

In continuation of the work done last year, a mound about 2.50 m high was tapped in close proximity to the distillery. A wall raised over a basement of 35 cm runs in east-west orientation to a length of 6 m encircling a verandah, small apartment and a row of vats. An approach to this complex was noticed on the western corner through a small apartment, measuring 2.65 X 3.70 m, nicely plastered with lime. At a higher level a platform made of rammed clay or earth grave was exposed. The antiquities recovered from this site included sherds of Celadon Ware, fragments of Syrian wine bottles. In the course of the excavation, other associated structures connected with water supply, sewage, etc., were also exposed. Further north, a huge wall, in alignment with the citadel wall, was laid bare.

In close proximity to this site was located the cemetery belonging to the period of Qutb-ul-Mulk and probably members of his royal families. In later period, the succeeding kings had built huge mausoleums at the site. Besides, some cisterns with regular steps leading to the floor were also exposed in close proximity to the cemetery.

The excavation yielded a rich array of minor antiquities such as copper coins, long-necked decanters with round profile, terracotta figurines, beads of faience and paste, glass beads showing segmented, gadrooned, cylindrical and disc shape. Pinch-lipped and

[1] This organization is referred to in the following pages as the 'Survey'.

perforated vessels, Celadon Ware, silver, copper and iron objects, rings inset with carnelian and jasper petals, pestle, mortar, querns, hilt of a sword and pottery including a paper thin variety decorated with intersecting circles, scale pattern, cross-hatching, chevrons, lozenges, zigzags and sigmas.

The excavated finds indicate that the site represents the metropolitan town of Qutb-ul-Mulk, founder of the Qutb Shahi dynasty. Covering an area of 8 sq. km it shows a gridiron plan. The bulk of the buildings, however, belong to Sultan Quli's period.

3. EXCAVATION AT PEDDABANKUR, DISTRICT KARIMNAGAR.—In continuation of the previous work, the Department of Archaeology, Government of Andhra Pradesh, carried out excavation at Peddabankur.

During the current field season, excavation was continued inside the brick enclosure adjacent to the smaller well, as a result of which another elliptical rubble basement was laid bare. At the points where the two wings of the elliptical structure (pl. I B) overlap the brick lining of the well, the bricks were found missing up to the top, which may indicate that two wooden poles were raised for carrying a pulley to draw water from the well.

Two circular rubble basements, each with a diameter of 85 cm, were found inside the structure for supporting the wooden poles. A 1-m wide entrance seems to have been provided on the southern side. The flooring in front of the entrance was rammed with hard morum.

The excavation revealed a two-fold sequence of Satavahana and Pre-Satavahana cultures. The coins recovered from the former include those of Gautamiputra Satkarni while finds of the latter culture consisted of only pottery and a few stray neolithic implements.

4. EXPLORATION IN DISTRICT KRISHNA.—Dr T. V. G. Sastri of the South-eastern Circle of the Survey found a late medieval Siva temple towards the northern side of Chikkavaram village in Taluk Gannavaram. An inscription, dated to the sixteenth century, was located on a pillar near the *dhvaja-stambha.*

5. EXPLORATION IN DISTRICT KURNOOL.—During the course of his exploration under the Srisailam Project, Shri B. Rajarao of the South-eastern Circle of the Survey noticed the megalithic Black-and-red Ware at Pratakota in Taluk Nandidotkur.

6. EXPLORATION IN DISTRICT MAHBUBNAGAR.—During his exploration at Chandragupta-Patna near Srisailam, Shri Venkateswara Rao of the South-eastern Circle of the Survey found brick structures of the early historical period.

7. EXCAVATION AT GOLLATHAGUDI, DISTRICT MAHBUBNAGAR.—In continuation of the previous season's work, the Department of Archaeology, Government of Andhra Pradesh, undertook excavation at this site under the direction of Shri Mohd. Abdul Waheed Khan. The present season's field work throws fresh light on the successive phases of construction, styles and artistic appendices of the temples. The objectives of the present dig were to establish the structural sequence of the temple.

The excavation at GLG-I exposed plinths, porches and other related structures, and at GLG-II, full plans of the three temples, termed as Temple-1, Temple-2 and Temple-3 (pl. II). The structures encountered at sites GLG-I, GLG-II can be grouped into three phases. The classification is based on the building-material, the method of

construction and the ground-plan. Though stone was employed throughout the three phases, the predominance of brick over the former in the earlier two phases is clearly seen; in the third phase, stone had completely replaced the brick.

Phase I of this temple is ascribable to about the ninth century A.D. and Phase II to the tenth century, while phase III is much later. In the last phase, besides building material, decorative elements and plan also underwent changes.

8. EXCAVATION AT CHANDAVARAM, DISTRICT PRAKASAM.—During the course of exploration in the District, the Department of Archaeology, Government of Andhra Pradesh located an important Buddhist site at Chandavaram in Taluk Darsi. The site was found to contain many *stupas, viharas* and beautifully carved sculptures showing *Dharma-chakra* and *Jataka* tales carved in Amaravati idiom.

The Department of Archaeology, Government of Andhra Pradesh, under the direction of Shri Mohd. Abdul Waheed Khan undertook excavation at Chandavaram, situated on the right bank of Gundlakamme river, about 10 km north-west of Donakonda.

During the course of excavation on a hillock popularly known as Singarakonda a *stupa* having *ayaka* platforms with a diametre of 40 m was completely exposed. A number of sculptured panels depicting the worship of Bodhi Tree, *Dharma-chakra* and the *stupa,* the birth of Buddha, the Renunciation and the sharing of the relics of Buddha by the Naga clan were brought to light. Though very much damaged, the plan of the *stupa* is fully preserved, namely the first enclosure, the second enclosure, the coping and the outer railing, the *pradakshina-patha,* the dome in three stages and the *harmika* at the top. An inscription in Brahmi characters of the second century A.D., coins and sherds of pottery of Black-and-red and the red-slipped wares were also noticed.

Since the image of Buddha is conspicuously absent, the art seems to show close resemblance to the first phase of Amaravati.

ARUNACHAL

9. EXCAVATION AT CHIDU-CHIMRI SUB-DIVISION DIBANG.—Dr Y. A. Raikar of the Directorate of Research, Arunachal, excavated a historical site near Chimri in the Dibang valley. Remains of two brick-built structures and some pottery belonging to the medieval period were brought to light.

10. EXCAVATION AT MALINITHAN, DISTRICT SIANG.—Shri L. N. Chakravarty of the Directorate of Research (History), Government of Arunachal, undertook a small-scale excavation at Malinithan. During the course of this work amongst other things, two images, one of standing Surya (in granite) on a chariot drawn by seven horses and Aruna seated in front, and another of Ganesa (in granite) were unearthed, respectively from the South east corner and immediate south of the temple base.

BIHAR

11. EXCAVATION AT ANTICHAK, DISTRICT BHAGALPUR.—In continuation of the previous year's work *(Indian Archaeology—A Review*[1] *1971-72,* pp. 4-5), the Vikramshila Excavations Project, under Dr B. S. Verma, assisted by Sarvashri B. N. Prasad and S. C. Saran, undertook excavation at Antichak with a view to tracing out the exact location of the ancient Vikramshila *Mahavihara.*

[1] This publication is referred to in the following pages by the year only.

Altogether seventy trenches (each 10 m X 10 m) were taken on the quadrangular mounds towards north-west, west and south-west. The excavation showed a well-defined layout of the monastic cells (fig. 1) of which a total number of fifty-two have been discovered this year. Besides, four chambers (pl. III A) outside the outer wall, just east of the Northern Gate were also exposed, being the corresponding part of the structure exposed last year towards west of the Northern Gate. The present excavation completely exposed the western wing of the northern outer wall to a length of 163-15 m. The western outer wall is also almost completely exposed, showing a length of 330 m. The width of the outer wall (3.6 m) was found to be uniform at every point.

Projecting from the other outer wall were found spacious rectangular (pl. III B) and circular structures, constructed at regular intervals of about 22 to 23 m away from each other. Originally, these structures must have intercommunicated with their corresponding cells, as attested by the discovery of a narrow passage connecting each other (pl. IVA). So far, eight rectangular and six circular structures have been discovered. Two of the circular structures were found erected at the corners of the north-west and south-west outer walls (pl. IV B), the remaining four were found located between the rectangular structures.

The most outstanding discovery of this year was the discovery of the magnificent Northern Gate (pl. V). It has a 14·30 m wide passage with double flights of stone staircase, traces of which were found only in sections up to 4.25 m away towards south; the passage is paved with stones and bricks of irregular shapes and sizes beyond which was another broad stone staircase of single step or flight. There, the entrance narrowed down with the construction of raised brick platform on either sides. The platforms were provided with rows of pillars numbering four on either sides. The narrow passage of the entrance, measuring, 15" 15 x 4'65 m was paved with brick-on-edge (pl. VI A). The roof of the entrance seems to have been supported on stone pillars. At the end of the passage were discovered another set of staircase, flanked with carved stone pieces depicting elephant's head with tusk carrying wooden log. On the top was found heavy stone door-sill with sockets for wooden doors. The inner pillared hall *(mandapa)* of the Main Gate was also exposed. On either side of the inner hall were found rows of monastic cells (4.20 X 4·10 m) opening towards a longitudinal common verandah of 3'10 m in width (pl. VI B). The Western Gate of the monastery was also excavated. Built of bricks it is half cruciform on plan.

Under one of the monastic cells of the southern mound were found a twin interconnected brick-arched underground chamber, entrance into which was through a hole provided in the north-west corner of the floor of cell. Similar, but badly damaged, arched underground chambers were also located in the northern mound and western mound. Remnants of a carved brick pedestal were discovered towards east of the North Gate outside the chambers referred to above. Situated almost outside the northern outer wall was found a peculiar structure looking like a four-faced elongated oven which may have some ritualistic purpose.

The finds obtained from this year's excavation included broken images of Lord Buddha in limestone, a beautiful figure of Jambhala in a pillar relief (pl. VII A), a headless figure of Surya, small stone figures representing different dieties like Ganesa, Marichi, etc., and terracotta plaques. The surface of the outer wall seems to have been decorated with terracotta plaques. Dog figurines and miniature votive *stupas* form the bulk of the terracotta objects, terracotta heads being next in quantity. A small *makara-shaiped* terracotta object was an important find of this year. A circular red terracotta sealing, bearing figures of *trisula* above and seated bull below and a legend reading *purushottama* (pl. VII B) was found from the inner courtyard near the Northern Gate.

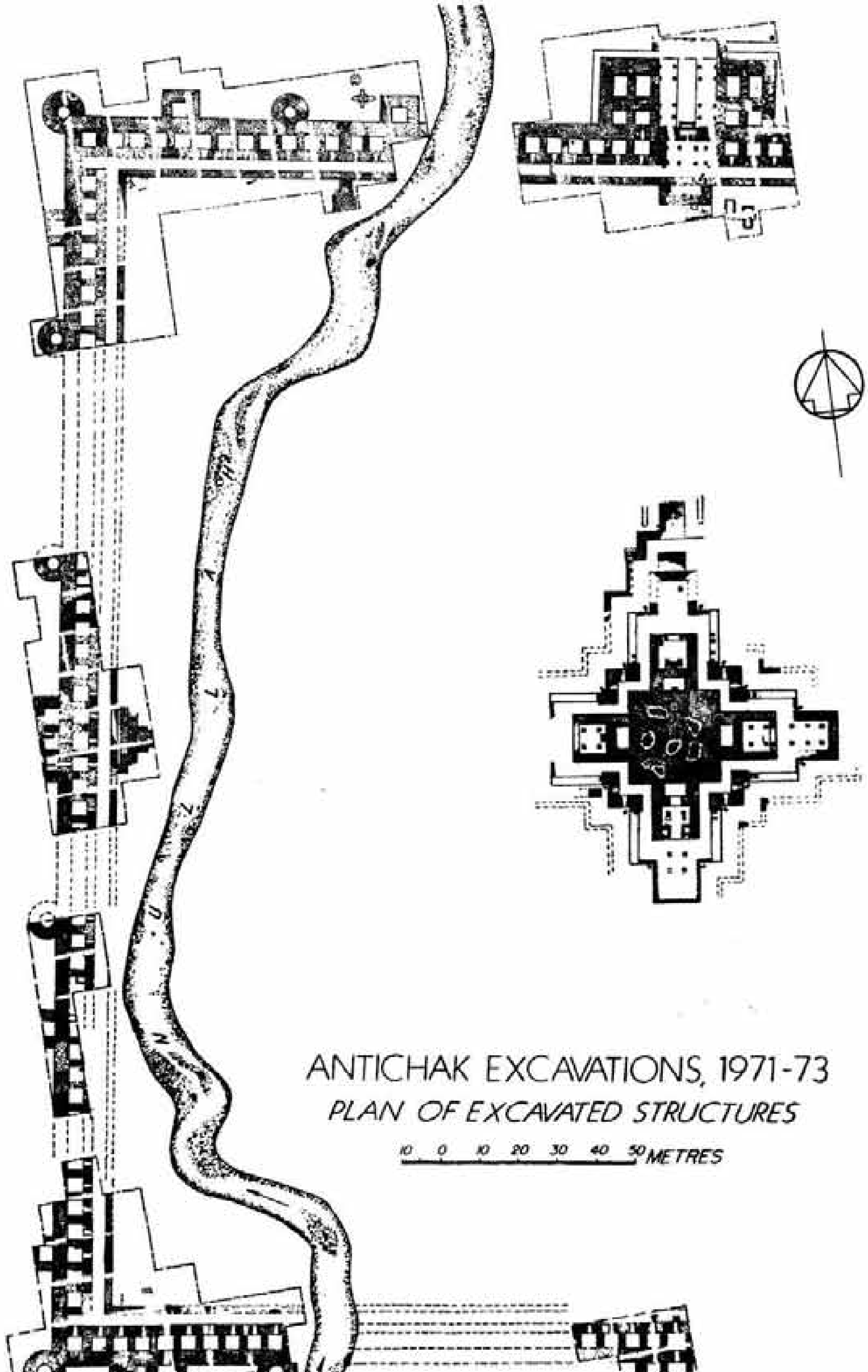

ANTICHAK EXCAVATIONS, 1971-73
PLAN OF EXCAVATED STRUCTURES
10 0 10 20 30 40 50 METRES

FIG. 1

Besides, beads of semi-precious stones in different shapes, pestles, iron objects, like lances, daggers, blades, nails, knives, etc., copper objects, represented by bangles, rings, vessels, etc., ivory objects like dice and a miniature *stupa* were also found.

12. EXCAVATION AT CHAMPA, DISTRICT BHAGALPUR.—The Department of Ancient Indian History and Archaeology, University of Patna, under Prof. B. P. Sinha, Dr R. C. P. Singh and Shri B. Narayan resumed *(1971-72,* p. 5) excavation at Champa. This year's excavation, however, had a limited purpose to achieve: first to find out whether the mud-rampart of the first phase extended further towards the western side; and secondly, to establish a correlation between the cutting across the defence and the habitation area in the interior of the fort. With these ends in view, an extension trench of 6x4 m, named CMPIJ, was taken up on the western side. Another trench of 6 X 4 m, named CMPIM, was taken in the same alignment at a distance of 70 m from CMPI.

The digging of CMPIJ revealed three periods of construction, ascribable respectively to late Northern Black Polished (abbreviated in the following pages by N.B.P.) Ware, Kushan and Gupta periods. The first period of construction at the site was characterized by the occurrence of a floor, made of rammed brickbats. Towards the eastern end of the floor, three steps, made of bricks, were noticed, which appear to have been utilized for going over the mud-rampart of the second phase. In the eastern corner of the trench was noticed an oven. Pottery and antiquities, found over the above floor, included sherds of the N.B.P. Ware and its associated types, terracotta toy cart, copper cast coins, bone points and bone arrowheads. The second period of construction was represented by a brick wall of one course, measuring 8"2 x TO m immediately overlying the floor of the first period. On the northern side, associated finds of this wall included terracotta figurine of a dog, terracotta human torso and fragments of miniature incurved rimmed bowls. The third period of construction at the site was characterized by a wall measuring 2.40 X 0.70 m, of which eleven courses were still extant. The associated finds included bone dice, terracotta talisman, copper antimony rod (pl. IX A), terracotta skin rubber, and terracotta human and animal figurines. Among pottery types, mention may be made of sprinklers in red ware, lid-cum-bowls and flattish pans with handle in red ware.

The digging at CMPIM revealed four periods of construction, ascribable respectively to the late N.B.P. Ware, Kushan, Gupta and post-Gupta periods. The first period of construction was represented by two parallel walls running in north-south direction, with 29 and 13 courses of bricks still *in situ.* In between the two walls was a brick-drain of two courses. The finds including pottery associated with the above period of construction consisted of N.B.P. Ware, bone points and stone beads. The second period of construction was also characterized by a wall running in east-west direction. The wall in question is associated with a *kuchcha* floor. Antiquities and pottery associated with this period of construction included terracotta circular object with flower design, terracotta stamps, stone beads and fragments of red and black wares. The third period of construction was also marked by a wall made of brick-bats in east-west direction, measuring 2.94 X .42 m. Associated finds included fragments of red ware with smooth surface, terracotta conical object and terracotta figurine of a dog. The fourth period of construction was repersented by a mud floor which was noticed at a depth of 1 "08 m from the surface. Antiquities found over the mud floor included a terracotta plaque showing a couple lying on a cot, inscribed terracotta sealings of the late Pala period (pl. VIII A), *circa* twelfth-thirteenth century A.D.

Attempts were also made to reach the foundation level of earlier mud-rampart in

trenches CMPIC and CMPIH, but the sub-soil water in both the trenches made it almost impossible to realize this objective.

The excavation in sectors III-IX of CMP-2 revealed three periods of occupation as noticed last^ year with the difference that Phase IA of Period I was marked by a greater number of painted N.B.P. Ware sherds, showing circular dots, signs of horizontal pattern and fish-scale designs (pl. VIII B). Antiquities associated with Period I included as before, stone moulds, terracotta Naga figurines and beads of stone, bone and ivory, copper ear ornaments, nose ring and hair clip (pl. IX A). Special mention may be made of terracotta plaque showing the figurine of Sakti with *ayudha* or weapons on the right side of her head, a female figurine with neatly arranged coiffure and a lady shown with raised arms (pl. IX B) belonging mainly to the late N.B.P. Ware phase.

13. EXCAVATION AT BALIRAJGARH, DISTRICT MADHUBANI.—Under the auspices of the Directorate of Archaeology and Museums, Government of Bihar, Dr Sita Ram Roy, assisted by Sarvashri B. K. Sinha, N. C. Ghosh, L. P. Singh and R. P. Singh, working under the general direction of Prof. B. P. Sinha, carried out excavation at Balirajgarh, a large fortified settlement with an area of 1.75 hundred acres.

Two trenches, one of 5-m width, across the rampart near the north-western corner, and the other of 10 x 5 m, in the habitational area, not far away from the southern side of the mound, were laid out. Owing to high water-level obtaining at the site, natural soil could not be reached. Notwithstanding, the excavation yielded significant antiquities and structural remains.

The rampart showed two phases of construction, the earlier of which, nearly 5 m in width, was built of big-sized bricks (50 X 20 X 4 cm). After the destruction of the original rampart, due perhaps to heavy floods, a new rampart was constructed, again of bricks. The extant height of this phase was available to forty-one courses. The core of the original rampart yielded a few pieces of the N.B.P. Ware, thus indicating its date of construction around second century B.C.

The cutting at the habitational area likewise revealed two cultural periods.

The site proved to be very rich in antiquities which included: terracotta plaques, showing both male and female figurines; hand-fashioned mother goddesses; terracotta animal figurines, representing mostly rams and bulls (pl. X); bone pins; cast copper coins; copper antimony rods; terracotta beads and balls; a terracotta sealing with *svastika* symbol; an iron crucible; and beautifully-fashioned beads of semi-precious stones. The ceramics of the Period were represented by the N.B.P., and grey and red wares.

Period II (ascribable to *circa* A.D. 600-200) covered a deposit of about 1-60 m thickness. The associated finds comprised terracotta animal figurines, stone beads, terracotta balls, etc. Besides, rectangular tiles with circular hole were also found.

15. EXCAVATION AT CHIRAND, DISTRICT SARAN.—Shri L. A. Narain of the Directorate of Archaeology and Museums, Government of Bihar, continued the excavation at Chirand under the general supervision of Prof. B. P. Sinha. The objective of this year's excavation was largely to confirm the results obtained in the last season's work. The cultural sequence obtained this year re-established the last year's findings.

The settlement of Period I, which was neolithic in cultural content, was located on the alluvial plain. The houses were circular on plan and were constructed of wild reeds, as evidenced by the find of burnt pieces of mud plasters bearing reed and bamboo impressions. An interesting feature of the settlement was the existence of a 75-cm thick

mud-wall around the dwellings. The associated finds including pottery were the same as those of last year. Amongst the new finds, the broken shaft-straightner, an adze made of bone and a terracotta humped bull deserve special mention (pl. XI).

Period II was chalcolithic in character. The dwellings of this period were bigger in area than those of the previous period though the building materials remained the same. The associated finds consisted of bone tools, microliths, beads of terracotta and stone and copper objects.

Period III was characterized by the occurrence of the N.B.P. Ware and its associated types. The houses were still made of impermanent materials. A few punch-marked and cast coins were obtained from the deposits of this Period. Among other finds, terracotta human figurines, clay beads, bone objects, iron and copper objects and stone beads were noteworthy.

Period IV was represented by the red and blackish grey weres, the percentage of the latter, however, being much less. Houses were made of burnt bricks. The associated finds included terracotta figurines, beads, and objects of copper and iron. Noteworthy objects of the period included a terracotta seal and a plumb-bob.

Period V followed after a long desertion of the site. The ceramic industry of this Period was distinguished by the pre-Moghul Glazed Ware and other common red and black wares.

14. EXPLORATION AT PANR, DISTRICT SAMASTIPUR.—Dr Sita Ram Roy, assisted by Shri B. K. Sinha and Shri N. C. Ghosh of the Directorate of Archaeology and Museums, Government of Bihar, explored an ancient site, named *Pandavasthana* at the village of Panr, about seven km north-west of Dalsingsarai. A few sherds of the N. B. P. Ware and its associated black ware were collected from the site. Besides, a copper cast coin (with elephant on the obverse and crescented hill on the reverse), an earthen pot with rope-impressed design and a stone bead were found in the collection of Dr Pamdeo Mahta.

16. EXPLORATION IN DISTRICT SINGHBHUM.—Dr Asok K. Ghosh of the Department of Anthropology, University of Calcutta, explored some sites of flake-blade industry (Middle Stone Age) on the Subarnrekha system. The industry comprises flakes, blades, scrapers of different types, points, knives, found from a bed of reddish silty clay, overlain by a thick bed of dull black soil. At places, the bed of black soil, especially on its upper portion, yielded neolithic celts. One of the important neolithic sites was situated very near the confluence of the Subarnrekha and the Kharkai within the town of Jamshedpur.

Shri D. Sen of the same Department revisited the neolithic sites discovered and worked out earlier on the Sanjay. The main sites where the present collection was made are Barudih, Dugni, and Ukri. The materials collected recently include neolithic celts, pottery and beads, besides some palaeoliths and microliths.

DELHI

17. EXCAVATION AT PURANA QILA, NEW DELHI.—In continuation of the previous year's work *(1971-72,* pp. 7-8), excavation was resumed at Purana Qila for the fourth season by the Headquarters office and the Excavations Branch of the Survey. The work was jointly directed by Sarvashri B. K. Thapar, M. C. Joshi and N. C. Ghosh, assisted by Sarvashri R. C. Agrawal, Avtar Singh, J. N. Gandhi, Jassu Ram, R. K. Sehgal and Manohar Lai. Besides imparting field training to the students of the School

of Archaeology, the specific objectives of the present excavations were: (a) to establish the earliest cultural horizon of the site; and (b) to trace further details of the occupation of the Mughal Period. With this end in view an area, covering about 750 sq.m, was taken up for excavation between Sher Mandal and Qila-a-Kuhna mosque.

The excavation revealed three principal structural phases of the Mughal Period. The structure of the earlier phase included walls of rubble and re-used brick-floors of mud, brick-bats or brick powder with fine lime plaster. Associated with lime plastered floors, troughs or small-sized tanks (pl. XII A) were also found. One of them, measuring 1 -20 X 1 X 0.75 m contained a large quantity of ash, some potsherds and a tiny damaged gold leaf, embossed with the figure of a horse within a decorative frame (pl. XII B). The huge brick wall exposed during the previous season, could not be traced further as it was found to be badly damaged due to brick robbing. However, it was found to have been built over an earlier structure. Presence of two round *(tandur* type) ovens was also attested on a floor (pl. XIV A).

The remains of the middle structural phase (pl. XIII) were not much different from the preceding ones and were represented by a house complex with a central oblong passage which was found to have been blocked on the northern side by a wall of brick-bats in mortar (pl. XIV B). Large earthern jars, intended perhaps for storage purposes, were found buried into some of the floors. The remains of the last structural phase consisted of structures of rubble and *lakhauri* bricks. Belonging to this phase was the *hammam* complex, which was fully exposed this year. It consisted of a heating chamber with rooms on the sides and the main entrance towards west. The eastern part of the *hammam* was found to be highly damaged.

The ceramics of the Mughal Period were found to be of the same fabric as those obtained in the previous seasons. Among these, storage jars (pl. XV A) and a highly ornate pot with a handle and a knobbed-base (pl. XVI A) are particularly noteworthy. Significant finds from the levels of this Period included: damaged Sunga terracotta figurine; fragment of a red sandstone *suchi* or cross-bar with lotus medallions on each face, of Kushan origin (pl. XVB); a terracotta sealing in Gupta Brahmi characters; terracotta figurines of the Rajput Period (pl. XVIB) and coins of Iltutamish, Balban, 'Alau'd-Din Khalji, Firuz Shah Tughluq and the Mughal ruler Shah Alam, besides fifty micro-beads of glass, indicating that for building floors or for other structural activity, the earlier levels were excavated, resulting in a mixed harvest of finds.

Deep digging in one of the trenches confirmed the already known culture sequence, ranging from third-fourth century B.G. to the Mughal Period. Noteworthy finds from the deep digging included a sealing, reading *ayadinasa,* in early Brahmi characters, a terracotta figurine of a boy and some Kushan coins.

GUJARAT

21. EXPLORTION IN DISTRICTS AHMADABAD, BANAS KANTHA, BHAVNAGAR, JAMNAGAR, JUNAGADH, KUTGH AND RAJKOT.—The Department of Archaeology, Government of Gujarat, during the course of an exploration in the above Districts, discovered three Late Stone Age, four protohistoric (pl. XVII) and four historical period sites. The explored sites are listed in the table below: *(LSA=Late Stone Age* ; *P=Protohistoricd* ; and *H—Historical).*

Sites in Daskroi Taluk of District Ahmadabad were brought to light through information furnished by Shri V. M. Trevedi of Undrel, while that of Navapur in Taluk Dholka of the same District was brought to notice by the Sarpanch of the village. The Panio Mound

at Khambhodar in Taluk Porbandar of District Junagadh was explored by the Department of Archaeology, some years ago, but its special features were identified this year. The mound at Pankhan in Taluk Keshod of District Junagadh was noticed by the Archaeological Research Society of Porbandar. Miss Suman Pandya, located the mound of Budhel of District Bhavnagar. The mound at Khorana, of District Rajkot, was explored on the information supplied by the Sarpanch of the village.

District	*Taluk*	*Site*	*Cultural assemblage*
Ahmadabad	Daskroi	Bakrol	LSA
-do-	-do-	Hathijan	LSA
-do-	Dholka	Navapur	P
Banas Kantha	Kankarej	Tantiyana	H
Bhavnagar	Bhavnagar	Budhel	P
Jamnagar	Bhanvad	Ghumli (Hardo Dungar)	H
Junagadh	Porbandar	Khambhodar (Paniyo)	P
Junagadh	Keshod	Pankhan	H
Kutch	Bhachau	Dhora vira (Kotda)	P
Rajkot	Morbi	Ghunada	LSA
Rajkot	Rajkot	Khorana	H

22. EXPLORATION IN DISTRICTS KAIRA AND PANCH MAHALS.—Sarvashri K. N. Momin, V. H. Sonawane, and R. T.. Parikh, of the Department of Archaeology, M. S. University of Baroda explored the following sites :

District	*Taluk*	*Site*	*Cultural assemblage*
Kaira	Cambay	Kaneval	Harappan: The site is on the northern side of the lake and shows an occupation-deposit of about three metres.
		Khanpur	Chalcolithic
		North of Kaneval lake	Late Stone Age.
		Rel	Chalcolithic.
		Vadgam	Harappan: It is a low lying mound, locally known as Timbo.
		Valli (Vanthlino Tekro)	Late Stone Age
	Matar	Adeva	Post-Harappan
		Changda	Harappan

District	*Taluk*	*Site*	*Cultural assemblage*
"	"	Valotri	Harappan
"	"	Vastana	Late Stone Age
"	Petlad	Nar	Chalcolithic: A large settlement of 400 X 200 m with an occupation deposit of about 3 m.
Panch Mahals	Baira	Bhilod	Nilakantha Mahadeva temple of fourteenth-fifteenth century A.D.
"	Godhra	Achhala	Late Stone Age
"	Kalol	Adadra	Late Stone Age
"	"	Bhukhi	Late Stone Age
"	"	Gusar	Early Historical
"	Jambughoda	Hathani Matas Gubha	Remains of Siva temple *(circa* twelfth-thirteenth century A.D.)
"	"	Zand	Two images of Mahismardini seated Ganesa, etc. memorial stones and temples dated to twelfth-fourteenth century A.D.
"	Lunawada	Bhimani Vavo near Malekpur	Remains of Siva temple were traced in the compound of modern Nilakantha Mahadeva temple belonging to the eleventh-twelfth century A.D.
"		Chavodia	Late Stone Age
"	Santrampura	Bhaikotalia	Late Stone Age left bank of river Mahi
"	"	Diwada Colony	Late Stone Age
"	"	Kandava dam site	Late Stone Age
"	"	Kelamula	Late Stone Age
"	"	Man	Late Stone Age; remains of temples dated to thirteenth-fourteenth century A.D.
"	"	Manpur	Late Stone Age
"	"	Santrampur	Late Stone Age

23. EXCAVATION AT CHAMPANER, DISTRICT PANCH MAHALS.—The Department of Archaeology of the M. S. University of Baroda, under Prof. R. N. Mehta, undertook excavation at Champaner. Surface explorations of the site had indicated the broad pattern of the layout plan, its fortifications, streets, etc. Two areas were selected: a part of a low rolling mound by the side of a large road; and a large residential complex.

The first area revealed the existence of nine houses. Of these, four had entrances from the main road, one from the side lane, while the remaining four were grouped around

an open area. These houses range from a single room structure to a four-roomed one, with raised platform and a small backyard. Within the houses, were found household objects like querns, mortar, etc. Near the door-jamb of one of the houses copper coins were found representing perhaps some sort of a religious offering at the time of fixing the door. The houses were built both of stone and brick. The excavation in the open area led to the discovery of a large structure-complex within a compound (pl. XVIII A). The partly-cleared southern part indicated the presence of a garden-like open area with lime concrete water channels.

The excavation in the other area indicated the existence of a building built on a small plinth approached by two steps. It consisted of two wings, the eastern and the southern, each with a set of three rooms (pl. XVIII B). Of these, the central room of the former wing showed an earlier entrance that seems to have been closed down in later phases, when a new entrance was made on the northern side. The house-complex was built of bricks with mud-mortar and finished with lime-plaster which, at some places, bore paintings (pl. XIX A). In the south-western room was an underground cellar. An opening in the courtyard on the south connected this area with another in which were found smaller rooms arranged in the style of the central structure. Towards the northern side of this was an open area with well laid out water channels and an octagonal water-tank (pl. XIX B). Of the finds obtained from this site mention may be made of pre-Mughal Glazed Ware, porcelain and Celadon Ware, besides the local burnished red and black wares; copper objects like rings, furniture fittings, plates, wires, etc.; iron objects like nails, knives, chains, bowls, arrow-heads, and copper coins of early Sultans of Gujarat.

HARYANA

24. EXCAVATION AT RAJA KARNA KA QILA, DISTRICT KURUKSHETRA.—In continuation of the previous year's work *(1971-72,* pp. 23-24) Department of Ancient Indian History, Culture and Archaeology of the Kurukshetra University, under the direction of Dr U. V. Singh, assisted by Dr Silak Ram and Dr S. P. Shukla, undertook excavation at Raja Karna Ka Qila.

The work was concentrated mainly in KKQ;2, on the northern fringe of the mound, where last year's excavation had revealed traces of late medieval fortification in the form of two parallel walls running east-west. This year's work revealed that the interior of these walls was filled with earth dug from the nearby part of the mound. With a view to retaining this filling, walls of *lakhauri* bricks were constructed at places. Two such walls were partially exposed in the excavated area. After removing the filling of about three and a half metres, a slopy pavement made of mud and mud-bricks, belonging to the early historical period was encountered. The exact nature of this pavement, however, remains to be ascertained by further excavation.

The finds from the filling included miscellaneous objects of terracotta, stone, iron, copper, shell, ivory and glass. Another trench, named KKQ-4, was found to be very much disturbed. The finds recovered from this cutting could be assigned to the early centuries of the Christian era and included animal figurines and a rectangular broken dice in terracotta, a few copper coins and stone beads.

In addition to the above cuttings at the main mound, a trial trench (KKO-5), measuring 5 X 5 m, was also laid out on the low mound located at a distance of about 200 m to the east of the main mound. Out of the total accumulation of 2.50 m, about 1 m from the top yielded remains of early historical, early medieval and late medieval periods. The

finds of these periods included sherds of the Red Polished Ware, two fragments of stone sculptures—one representing a male figure and the other a part of Mahishasuramardini image—and copper coins. About 1.5 m deposit above the natural soil yielded proto-historic remains characterized by a sturdy red ware painted in light black colour with geometrical, linear and plant designs. Some of the sherds in this assemblage bore incised decoration. The painted designs and shapes in this ware are almost similar to those recovered from Bara. The other finds of this period included bangles and beads in faience and terracotta triangular cakes.

JAMMU AND KASHMIR

25. EXPLORATION IN JAMMU AND KASHMIR REGION.—Dr R. V. Joshi of the Prehistory Branch of the Survey, assisted by Shri B. P. Bopardikar and Shri M. U. Qureshi and a team of Deccan College, consisting of Dr S. N. Rajguru, Dr Pappu and Shri Kulkarni carried out explorations in the Jammu and Kashmir area.

A comparative study of the glacio-fluvial and lake deposits of the western and eastern margins of the Kashmir basin was carried out in August-September, 1972. In the eastern side a detailed examination was made of the Liddar Valley which had yielded, in 1969-70, Stone Age remains in the Pahlgam area. In the present exploration in the same area, a few more Early Stone Age tools were obtained.

In the Liddar Valley, particularly below the Pahlgam town, there appars to be an evidence of only one glacial activity in the form of deposition of glacial or glacio-fluvial boulder bed, which is later considerably modified or obliterated by the locally-derived screes of different periods. Further downstream, this boulder bed gives rise to the boulder conglomerate, presently exposed in the sections at Bawan (pl. XX), Krungus, etc., where it is overlain by the Karewa lake beds. In the western margin around Shupiyan and Pakharpora, a similar boulder bed overlies the clay and sands of tilted Karewa deposits. As no evidence of the existence of the glacial deposits underlying these lake beds has yet been obtained, these sediments may be representing two stages of lacustrine deposition, separated by the boulder bed.

The entire mechanism of the formation of boulder beds, screes, cones and in places clay and sand beds in the Liddar Valley (pl. XXI), is greatly influenced by the fluvial action intensified by the heavy monsoonal precipitation and steep gradients of the valleys and the contemporary tectonic activity. In this respect the area is comparable to the Kangra Valley where extensive cone-formations and their further cutting into high-level terraces have been noticed. A direct glacial action seems to have been confined only to the higher altitudes above 3000 m. It is extremely subordinated in the lower levels at Pahlgam and is totally absent downstream.

The fossil-bearing breccia with traces of pebbles underlying the Karewa beds at Sombra perhaps represents Middle Pleistocene horizon. The boulder bed of Pahlgam, as well as the boulder conglomerate from Krungus and Bawan appear to be of the same Middle Pleistocene age. Interestingly enough, this has indirectly been supported by the finding of Early Stone Age tools in the upper levels of the boulder bed at Pahlgam. De Terra considers Pahlgam boulder bed as of the second glacial stage, and the boulder conglomerate of Bawan, etc., as of first. Our observations, however, run contrary to this hypothesis as stated above.

Further work will have to be taken up in the Ladakh region for investigating the post-glacial sequences, as such areas have comparatively less steep valley forms and, therefore,

less confusing stratigraphic evidence. It is also necessary to ascertain whether such tracts were habitable in the prehistoric past. The Karewa lake beds hold a crucial position in the Kashmir Valley as they link the entire marginal areas which have experienced glacial, fluvio-glacial or purely fluvial episodes during the Quaternary period. As such, it is proposed to examine the southern and western margins of the basin for establishing suitable stratigraphic links with the Jammu-Udhampur areas beyond the Pirpanjals.

A few traverses in the Tawi and its tributaries in the Jammu-Udhampur region have revealed the presence of two distinct types of boulder-beds, one composed of sandstone and quartzite boulders and having dark brown shades and another with characteristic white colour and containing dominantly limestone pebbles. This area has developed river terraces which have yielded Early Stone Age artifacts. The sequence and origin of these terraces and their relationship with the events in the Kashmir basin will have to be freshly established in the light of our recent work in the latter area.

KERALA

26. EXPLORATION IN DISTRICTS IDIKKI, PALGHAT AND TRICHUR.—Shri K. M. George, a research student of the M. S. University of Baroda, working under the guidance of Prof. R. N. Mehta, explored thirty megalithic sites, the most important among which being Alampetti and Rajakkad in District Idikki, Kornapara in District Palghat and Elanad and Kondazi in District Trichur. The megaliths fall into different types like circles, dolmens, alignments, rock-cut caves and urns.

MADHYA PRADESH

27. EXCAVATION AT BHOJASALA, DISTRICT DHAR.—In order to ascertain the details of the original plinth, Shri V. K. Tiwari of the Central Circle of the Survey carried out a small-scale excavation at Bhojasala. Trenches were laid out to the northern side of the monument. During the course of the excavation following structures, assignable to the medieval period, were encountered: two terraces of concrete, measuring respectively 5 X 3 and 1.70 X 10 m; a small structure of low walls, provided with two steps; and a small cell.

Another trench, 3 X 3 m in area, taken on the eastern side of the monument, yielded yellow earth mixed with bricks and brick-bats, assignable perhaps to the Paramara period. Among the finds from this trench may be mentioned potsherds of Paramara period, a few architectural members of temples, a number of iron objects including rings, locks, knives, arrow-heads and nails, a copper ring, porcelain fragments and pre-Mughal glazed pottery. A trench in the western side of the monument yielded a small mutilated stone sculpture of Vishnu.

28. EXPLORATION IN DISTRICT DRUG.—The Department of Ancient Indian History, Culture and Archaeology, University of Sagar, conducted explorations in the District under the direction of Prof. K. D. Bajpai, assisted by Dr S. K. Pandey and Shri S. N. Manwani. A village called Arjuni, located on the bank of river Shivanatha on Rajnandgaon-Dongargaon road was surveyed, which yielded pottery of the early Christian period. A few early medieval stone sculptures were also recovered.

During the course of exploration, sculptures belonging to the Kalachuri period were noticed at several sites: Balod, Bhoramdeo, Chaurel, Deokar, Dhamdha, Gurur, Loharra,

Rajauli and Sahaspur. The sculptural art of this area bears a close similarity with the sculptures found at Janjgir, Kalachuri, Narayanpur and Ratanpur sites.

At Bhoramdeo, there is a group of four temples, the earliest being a brick-temple. It is in the tradition of the earlier brick-temples found in several parts of Chhattisgarh, like Kharod, Palari, Rajim and Sirpur. These brick-temples were built during the reign of the Pandu rulers. Out of the entire lot, the stone temple at Bhoramdeo stands out as the most outstanding structure. It has the largest number of sculptures decorating its outer walls.

Gurur has an altogether different type of temple architecture and differs from the north Indian Nagara style. Its upper part shows receding tiers, placed one above the other. The images of Ganga and Yamuna are carved on the door-jambs of the entrance of the temple.

At Bhoramdeo, Ghaurel and Deokar many *sati* pillars were also discovered. These pillars are stylistically different from those found in other parts of Madhya Pradesh. Some of these bear inscriptions. In some of the pillars the couples are shown sitting in the *alingana-mudra.*

As a result of this exploration, megalithic monuments were located at Dhanera, Kakarabhat, Karibhadar, Magjhar and Sorar.

29. EXPLORATION IN DISTRICT GUNA.—Shri Surya Kant Srivastava, a Research Scholar in the School of Studies in Ancient Indian History, Culture and Archaeology, Jiwaji University, Gwalior, explored a small portion of the Kotara nullah, a tributary of Ghora Pachar in the District. The nullah was followed up to 1 "5 km upstream from the bridge near Kotara village on the Agra-Bombay national highway.

A mixed assemblage of tools, ranging from Lower to Upper Palaeolithic, was discovered from the bed of the nullah. The Lower Palaeolithic component of the collection included one each of handaxe, scraper and cleaver (?), made on sandstone, all being highly rolled. However, the major portion consisted of Upper Palaeolithic tools, made on jasper. These included side, end and hollow scrapers, points, burins, tortoise cores and a few blades (pl. XXII A).

30. EXCAVATION AT TUMAIN, DISTRICT GUNA.—In continuation of the previous year's work *(1971-72,* pp. 27-29), the Department of Ancient Indian History, Culture and Archaeology, University of Sagar, under Prof. K. D. Bajpai, assisted by Dr S. K. Pandey and Shri V. D. Jha, resumed excavation work at Tumain, 10 km south of Ashoknagar. The main objective of this season's work was to find out the nature of the settlements in different parts of the ancient township of Tumbavana.

During this season, three new trenches, TMN-4, 5 and 6, were taken on different mounds of the site. The previous season's work had indicated that the earliest occupation of the site had started some time in the fifth century B.C., and had continued till about the twelfth century A.D. The current season's work confirmed this sequence.

TMN-4 was taken up in the centre of the present village, marking the highest point. A structure belonging perhaps to a massive building, made of well-dressed local stones, was encountered here. Broken carved pillars and fragments of stone sculptures, belonging to the Gupta and the Pratihara periods, were found used in the walls. On the north-eastern corner of the building, a floor made of stone slabs was found. As many as six storage-jars belonging to the post-Pratihara period were recovered from the floors of different rooms of the house. Below this, the second structural phase represented the period of the Gurjara

Pratiharas. In this period too, the local stone was used for the buildings. An important discovery from this trench was that of a hoard of 589 silver coins (assignable to a period between the seventh and tenth centuries A.D.) of the Indo-Sassanian type (pl. XXII B). These coins were kept in a copper vessel covered with a terracotta dish. They were recovered from under the plinth of the excavated structure.

TMN-5 was taken up on another mound on the northern outskirts of the village, close to a small rivulet called Oar. The excavation revealed four structural phases belonging to the period from *circa* 300 B.G. to sixth century A.D. The first three were brick-structures belonging respectively to the Gupta, the Kushan and the Sunga periods, the lowest, being pre-Sunga, was represented by structures of stone boulders. The local *dhau* stone was found conspicuous by its absence. Between the Kushan and the Sunga levels clear indications of fire were found. Inside the trench and in the adjoining cuttings was found a layer with ash and charcoal indicative perhaps of a conflagration. Below this level remains of an iron smelting kiln were noticed. A ring-well, belonging to the Sunga period, was also encountered in this trench.

TMN-6 was taken on a mound to the left of the eastern gateway. The cutting, however, could not be taken deep due to rocky surface below, the occupation deposit being about 2.5 m thick. The main settlement on the mound was found to be of the Kushan period as evidenced by a brick-structure, a mud platform and stone boulders. The cultural sequence of the site with its characteristic features was as follows :

Period I *(circa* sixth-second century B.C.) yielded: black-and-red and white-slipped wares; iron objects like arrow-heads and spear-heads; bone arrow-heads; beads of semi-precious stones and terracotta; finger-rings; and punch-marked coins of copper.

Period II (second century B.C.-first century A.D.) yielded: the mica mixed red ware and a few sherds of the N.B.P. Ware; structures of baked bricks and stones; copper punch-marked coins; beads of terracotta and glass; shell bangles; terracotta skin rubbers; and iron objects like arrowheads, spear-heads and nails.

Period III (first-fifth century A.D.) was characterized by the use of Red Polished Ware and stamped pottery. The antiquities included small stone images, terracotta figurine of a Yakshi, objects of iron like blades, sickles, arrows, spear-heads, axe, etc. bone arrowheads, shell bangles, beads of copper, copper miniature bells. A clay sealing bearing the legend *'Simhasya'* in the Brahmi script of fifth cent. A.D. was an important find of this period.

Period IV (sixth-twelfth century A.D.) yielded two small stone images of Ganesa. Other antiquities include iron arrow-heads and copper bangles, and beads of glass, shell, and terracotta. An outstanding discovery of this period was a hoard of 589 silver Indo-Sassanian coins kept inside a copper vessel.

31. EXPLORATION IN DISTRICT GWALIOR.—Prof. B. B. Lai of the School of Studies in Ancient Indian History, Culture and Archaeology, Jiwaji University, Gwalior, discovered a rich Lower Palaeolithic site along the Agra-Bombay national highway near Ghatigaon in the District. The tools occur in a deposit comprising boulders and large- to medium-sized pebbles, which is overlain by a layer of red earth locally known as *muram.* The large size of the boulders as also the height of the deposit above the bed of the nearby Parvati river indicate that we are here faced with one of the most ancient terraces of the river which seems to have shifted its course since. However, to ascertain a proper terrace-sequence it is necessary to carry out a thorough investigation of the area.

The tools, made of sandstone/quartzite, comprise handaxes, cleavers and scrapers (pl. XXIII). Besides, there are many cores and flake. It was further observed that the

handaxes and cleavers were outnumbered by the scrapers. The last-named included side, end and round scrapers.

Dr K. P. Nautiyal, assisted by Sarvashri Surya Kant Srivastava and Darshan Lai Rajput, conducted an exploration along the bank of the Morar river near Morar cantonment. The team surveyed the river down to Mahe, 5 km from Morar, and discovered tools consisting of large-sized broad blades, scrapers and points. Made on jasper, they show secondary retouch often on one side but sometimes on both. On typological consideration, the tools could be ascribable to the Upper Palaeolithic (pl. XXIV A).

32. EXPLORATION IN DISTRICT MORENA.—Shri Surya Kant Srivastava, a Research Scholar in the School of Studies in Ancient Indian History, Culture and Archaeology, Jiwaji University, Gwalior, conducted an exploration of the lower valley of the Chambal in the District.

In the course of the exploration, several sites, relating variously to prehistoric, protohistoric and historical periods were located in the northern and north-western region of Taluk Sheopur. The river Chambal was explored upstream from village Khir Khiri (Biloni) to its confluence with the Parvati, the distance being about 35 km. Three huge cliff-sections were noticed, one on the left and the other two on the right bank of the river, respectively near village Indara in Rajasthan and Jani and Sevapur in Madhya Pradesh. While the stratigraphic sequence could not be studied fully, a few rolled handaxes and scrapers, belonging to the Lower Palaeolithic age, as also a few tools consisting of scrapers, points, etc. of the Middle Palaeolithic were discovered near the sections. A few microliths were also picked up at Khir Khiri (Biloni) on the right bank and at Banzari Ghat on the left bank.

Two sites yielded material pertaining to the protohistoric times. Of these, Uncha Khera, situated about 8 km downstream from the confluence of the Parvati and Chambal, consisted of a huge mound with a circumference of about 2 km and with an elevation of 13 m. Among the pottery collected from this site are a few sherds of black-on-red ware which appears to resemble the Malwa fabric. Sherds of this very fabric were also collected from Mewada, situated on the bank of the river Sip at about 12 km upstream from its confluence with the Chambal. The huge mound at Mewada, roughly measuring about two and half km in circumference and having an elevation of about 12 m, was noted to be very potential for further investigation. These two sites also yielded pottery of other fabrics, of which special interest attaches to a red ware usually painted in white pigment.

Several historical sites were also discovered along the course of the river Chambal in Sheopur region as also a few on the other side in Rajasthan. Notable among them were Khera Danta, Khera Dantrda, Khera Kanker, Khera Laduka, Khera Nagali, Khera Rameshwar and Namuna-Ki-Thor, all in Sheopur Tahsil, and Khera Mundra and Khera Rodawad in Khandara Tahsil of Rajasthan. Historical sites were also located on the left bank of the river Sip. Out of them, Khera Bearoada and Khera Shri Rampur and Khera Saroda seem to be potential.

33. EXPLORATION IN DISTRICT NARSINGHPUR.—Shri V. S. Wakankar of the Vikram University, Ujjain, explored the sandy banks of the rivers Varureva and Sher near Deva Kachar in District Narsinghpur and found several fossil bones of *Bos namadicus, Elephus*

Indicus, deer and tusk of hippo. In association with the bones of *Bos namadicus* he found a few late Acheulian points.

34. EXCAVATION AT BHIMBETKA, DISTRICT RAISEN.—In continuation of the last year's work *(1971-72,* pp. 30-31) Shri V. S. Wakankar and Dr S. K. Arya of the Vikram University, Ujjain, Dr V N. Mishra of the Deccan College Postgraduate and Research Institute, Pune and Dr (Miss) Sussan Haas of the Museum fur Volkerkunde, Basle, Switzerland, carried out further excavation at the site. Of the seven rock shelters taken up for digging four, III A-28, 29, 30 and III E-24 were supervised by Shri Wakankar and Dr Arya, one, III E-23, by Dr Mishra and two, III E-21 and III C-13, by Miss Haas. The results of the excavations are as follows :

III A-28 : The occupation deposit in this trench measured about 1.90 m in depth, consisting of six layers. Of these, the upper two, viz. layers (1) and (2) belonged to the medieval period. Layers (3), composed of black earth, yielded microliths, along with several sherds of Malwa chalocolithic ware, steatite beads, copper objects, rubbed haematite pieces and bones of deer, boar, antelope and peacock. Below this was the mesolithic deposit layer (4), which yielded bones and microlith. Layer (5) was marked by the absence of triangles and trapezes and the use of burins and end-scrapers. Within the deposits of this layer burials of a child and an adult (probably both fragmentary) were also found. The child had a bone pendent in its neck. The burial of the adult was located towards the north of the child. It was badly mutilated and contained only a few bones of the skull, a few teeth, pieces of the ribs and the femur. In layer (6), weathered chips and stones were found in large numbers along with a few Middle Palaeolithic tools on sandstone. Though natural bed rock did not appear at the base of this layer huge blocks of stone hampered further digging.

Ill A-29 : The shelter seems to have been occupied by some metal smiths in medievel times. A stone image of Ganesa, about 10 cm high, was found in the uppermost layer. Layer (2) yielded several pieces of small crucibles, two iron arrowheads, several nails and a small piece of brass sheet. Layer (3) yielded several microliths, pieces of chalcolithic pottery and a few mace-heads. The shapes represented included triangles, trapeze, Junates, blunted back blades, flakes and points. Layer (4) was composed of detrital laterite and yielded several Acheulian cleavers, handaxes and scrapers. The lower part is more compact and yielded several highly weathered bifacially worked pebble-tools. This clearly indicates that the first occupants of Bhimbetka were the pebble-tool makers. This confirms the results of the last year's dig in BHIM-III F-24 TR-II, where pebble-tools were found in the lowermost layer and underlay the Acheulian tool-bearing deposit.

BHIM-III A-30 : This shelter is very shallow and shows an alignment of big stones about 4 m from the edge of the shelter. The portion between these stones and the shelter was excavated. Layer (1), consisting of light brown soil, yielded remains of medieval period. Layer (2) yielded a few sherds of the early historical period, iron arrowheads and a few beads. Microliths were also found along with these finds. Layer (3) yielded chalcolithic pottery, one copper piece, steatite beads, microliths and mace-heads. Layer (4a) yielded microliths without any pottery. Layer (4b), of the same composition as the previous one, showed a marked decrease in the number of triangles and trapezes. At the same time it was noticed that chert and jasper was more commonly used. Burins, side and end scrapers, and a few blades on sandstone also appeared in this layer. Layer (5), of detrital laterite, yielded palaeoliths. This was actually an occupation floor of the Acheulian period. More than hundred tools were obtained *in situ.* The tools consisted of

cleavers, handaxes, points, scrapers, flakes and choppers. A stone alignment was also exposed within this deposit.

BHIM III F-24 : The trenches of the last year were extended. The sequence already noticed last year was repeated this year.

III F-23 : It was dug to a depth of l.40 m, but the bed rock was not reached. In this shelter an unbroken sequence from the upper Acheulain to the late Mesolithic was found. Six layers were distinguished. Layer (1), composed of loose, fine light grey soil, yielded microliths of chert and chalcedony, represented by blunted back blades, lunates, triangles and trapezes. Associated with these were found sherds of plain grey and red wares of historical to recent date, indicating that the use of microliths survived into historical times or, perhaps more logically, that the caves had been frequented by people into post-Stone Age period. Layer (2) was composed of black compact clay and yielded geometric microlithic tools. The types included obliquely truncated and blunted back blades, single and double trimmed points, triangles, mostly scalene, lunates, both narrow and broad form, trapezes and petit tranchet and burins. The cores testify to the use of pressure flaking technique of blade detachment. Although the main raw material was found to be chalcedony, chert and jasper were also used. The size of blades in the latter two materials tends to be considerably bigger. A number of haematite pieces with rubbed faces showing their use for making colour were found in this layer. Layer (3) was characterized by the occurrence of stone chips, suggesting considerable weathering of the rock. In this layer the occurrence of microliths begins to decline while blades and flakes of quartzite which occurred sparingly in the first two layers become more common. A noteworthy find of this layer was a stone alignment, oriented north-south, intended perhaps to contain a living area inside the cave. Layer (4) was composed of light red coloured earth with many large stones. From this layer downwards microliths were found to be totally absent, and the use of siliceous material for tools became rare. Quartzite was found to be the prime material for the artifacts. This layer yielded thin blades, single and double end-scrapers on blades, side scrapers, burins, Levallois flakes and cores. An interesting find from this layer was a bifacially retouched tanged point which can be compared only with Aterian points of this type. The assemblage from this layer can be ascribed to the Upper Palaeolithic. Layer (5) was composed of dark red coloured earth with many stone fragments and yielded Levallois flakes, points and cores, side scrapers, blades and a few cleavers. The assemblage can be described as the Mousterian of the Acheulian tradition. Layer (6) was similar in composition as (5) but more compact and stony and yielded handaxes and cleavers in large numbers in association with Levallois flakes, blades and scrapers, the assemblage being typical evolved Acheulian.

Ill F-21 : In this shelter, the top 25 cm yielded a microlithic industry on chalcedonic material, similar to that found in III F-23, but with pottery occurring in larger quantity. Below this, for 30 cm or so quartzite flakes and blades were found. Retouched tools were very rare.

Ill C-13 : In this shelter the deposit ranges from 10 to 20 cm in thickness, which yielded a microlithic assemblage in association with plain pottery.

For Palaeoclimatic studies fourteen pits were dug in the Choti Jamun Ihiri valley. Excavation revealed a detrital laterite deposit resting over the bed rock of sandstone, which did not yield any stone tools. Above this layer was found a similar deposit, but loose in nature, yielding many Acheulian tools. This deposit was overlain by a thin sandy red silt yielding highly weathered and patinated Upper Palaeolithic industry on chert and chalcedony.

MAHARASHTRA

35. EXPLORATION IN DISTRICT AURANGABAD.—In the course of an exploration in the District, the Directorate of Archaeology, Government of Maharashtra, located an ancient site going back to Satavahana times at Dukarne. The finds obtained from this site include: an idol of Tirthankara; rotary quern; terracotta objects; sculptures; beads; and pottery.

The Assistant Director of Archaeology, along with the Jayakawadi Dam Project authorities, carried out an extensive survey of many villages that are likely to be submerged under the water of the proposed reservoir of the Jayakawadi Dam at Paithan. A number of historical sites, loose sculptures, epigraphs and such other antiquities were obtained as a result of this exploration.

36. EXCAVATION AT BHOKARDAN, DISTRICT AURANGABAD.—The Universities of Nagpur and Marathwada jointly carried out excavation at Bhokardan, under the direction of Dr S. B. Deo of the Nagpur University, assisted by Drs A. M. Shastri, O. P. Verma, A. P. Jamkhedkar and G. B. Deglurkar of the same University and Dr R. S. Gupte and Shri T. V. Pathy of the Marathwada University.

Bhokardan which has been identified with ancient Bhogavardhana has been referred to in the inscriptions at Sanchi and Bharhut and lies 64 km from Aurangabad on way to Ajanta. A large number of surface antiquities, going back to the Satavahana period, had already been reported from this site.

The site comprises four mounds, rising to an average height of 12 m on both sides of the river Kelna. Of these, the one designated as Mahankal is capped by modern habitation. Of the rest, one has been completely disturbed by modern Muslim graves. The third, named as Mogartakka, has been disturbed in the upper horizons by large-scale ploughing whereas the fourth, though under cultivation, has been relatively less disturbed. The present township, situated as it is on the ancient mound, frequently reports the find of Satavahana antiquities.

Two mounds were tapped this season. The mound owned by Shri Dharewal (Md-I) (pl. XXIV B) was laid under a grid of trenches, each measuring 5 m. sq. The total area covered was 1000 sq. m. On the mound designated as Mogartakka (Md-III) lying close to the NW of Md-I and separated from the latter by a modern cart-track, were laid L-shaped trenches so as to connect both these mounds.

The total habitational-deposit was found to be 2.86 m distinguished by five structural phases, all belonging to the Satavahana period, as evidenced by over four hundred coins of that dynasty. While a precise chronology of the Satavahana phases can be evolved only after the numismatic data is available, it may be noted that on the basis of pottery the deposit could be divided into early and late Satavahana, the latter characterized by the find of amphorae, Red Polished Ware, *bullae* and beads. Both the phases were, however, associated with the black-and-red ware and lead and potin coins of the Satavahanas.

Large-scale evidence of brick and clay structures was available. These could be divided into five phases. The average house seems to have been equipped with a verandah, a sitting room and a kitchen, attached to which was a soakage-well, built either of rings or of bricks (normal or of wedge shape). The houses had no planned layout and a group of five houses was found to have been separated by irregular alleys. The houses had a rubble foundations set in black clay, walls, partly built of bricks and partly of clay, roof held in position by wooden posts and covered with typical Satavahana tiles and floors of

rammed clay and tile pieces. The verandah was normally 2.50 m in length and 1.5 m in width, the sitting room, 3 X 3 m and kitchen, 3-5 X 3 m. The kitchen was equipped with clay ovens with open arms and a series of storage jars embedded in the floor.

The pottery comprised: bowls and dishes in black-and-red ware; basins, *kujas, handis,* storage jars, stands and storage pots in red-slipped and red-washed wares; a range of utilitarian pots, in blotchy black-and-red ware; and a series of miniature pots in coarse handmade redware. In the upper horizon were recovered sherds of amphorae, Red Polished and Megarian Wares.

The other items of material equipment comprised: four hundred coins of copper, potin and lead; a score of terracotta *bullae* with legends in Greek (pl. XXV A); coin moulds and seals; over one thousand beads, pendants and amulets of agate, carnelian, crystal, lapis, jade, glass, jasper, faience and terracotta along with half a dozen bead-moulds; twenty votive tanks in terracotta of different shapes; scores of human and animal figurines; ivory and shell bangles, handle with bird motif and kohl sticks; terracotta ear ornaments (pl. XXV B), stone rotary querns and saddle querns with Buddhist symbols; and burnt grains which comprised wheat, jowar, gram, ber and rice.

However, the most exquisite of all the finds was the lower half of an ivory female figurine (pl. XXVI), carved in the round with two female attendants. It was located on the floor of the later Satavahana levels. It is reminiscent of the Pompeii ivory and in execution is better than the surface specimen from Ter. The Bhokardan ivory is the first well-dated specimen from a stratified excavation.

Bhokardan seems to have been a centre of various crafts and industries during the Satavahana period. Its importance, however, dwindled after the fall of the Satavahanas of Paithan. It seems to have been re-occupied only in the medieval period.

37. EXCAVATION AT PATNE, DISTRICT JALGAON.—The last year's work at Patne *(1971-72,* pp. 32-33) provided evidence of a succession of Middle Palaeolithic, Upper Palaeolithic and Mesolithic industries. Encouraged by these results excavation was resumed at this site by Shri S. A. Sali of the Deccan College Postgraduate and Research Institute, Pune, under the general guidance of Prof. H. D. Sankalia, particularly for understanding the contents of the Upper Palaeolithic Culture.

In all, fourteen trenches, PNT-6 to PNT-19, were laid out in the fluvial and loessic deposits at two localities called Area A and Area B, the former lying at the foot of the northern scarped face of Ajanta Hill Range and the latter, within an amphitheatre-like depression, carved in the northern face of the hill range. The cultural sequence revealed by the excavation is shown in the following table :

Layer No.	*Composition*	*Average Thickness*	*Cultural Period*	*Cultural Affiliation*
1.	Dark brown gravel	20 cm	III C	Late Mesolithic.
2.	Brown loessic silt	1-40 m	III B	“
3.	Fossil soil	40 cm	III A	Early Mesolithic.
4.	Current-bedded sandy fine gravel	1.0 m	--	“

Layer No.	Composition	Average Thickness	Cultural Period	Cultural Affiliation
5.	Yellow kankary silt	1-50 m	H E	Late Upper Palaeo-lithic
6.	Sandy fine gravel with occa sional boulders and pebbles	30 cm		
7.	Brown fissured clay	20 cm	II D	S3
8.	Dark brown fissured clay	90 cm	II C	
9.	Sandy fine gravel	30 cm		
10.	Brown silty clay Calcareous	70 cm	II B	Early Upper Palaeo-lithic
11.	angular gravel	30 cm		
12.	Highly calcareous silt	1-30 m	II A	Early Upper Palaeolithic
13.	Reddish sandy fine gravel	I-50	I	Advanced Middle Palaeolithic
14.	Weathered basalt	—	—	—

Except the fossil soil of layer (3), all the deposits yielded stone artifacts, finer sediments, such as silts and clays, being compartively richer in yielding artifacts than the gravels. All the artifacts were found to be in mint condition. Alongside the finished tools waste-product were also obtained in fairly large proportion, indicating that the tools were manufactured on the site. The characteristics of the stone tool industries of different periods and their phases are as follows:

Period I : The chief raw material used in the industry of this period is jasper. The tool assemblage comprises scrapers, points and borers on flakes, blades and burins. Significantly enough, the presence of the crested-guiding-ridge technique was attested on the blades. By and large, the industry shows advanced Middle Palaeolithic characters tending more towards the Upper Palaeolithic. An ostrich egg-shell piece was found in association with the lithic tools.

Period II: Techno-typplogically, the industries of this period are truly Upper Palaeo-lithic in character, being dominated by either blades or tools made on blades and burins. For producing blades the use of crested-guiding-ridge technique seems to have been made. Five sub-periods, termed A, B, C, D and E, were recognized in this period. Of these, the first two belong to the Early Upper Palaeolithic and the rest to the Late Upper Palaeolithic. The sub-division is, however, based on consideration of raw materials, size and shape of the tools.

Sub-period II A is represented by backed knives, end-scrapers and backed scrapers on blades, scrapers and borers on flakes, blades, burins and fluted as well as discoidal cores,

chiefly on jasper. An increase in the blade element and decrease in the proportion of scrapers on flakes are the two other factors which distinguish this sub-period from the preceding Period I.

Sub-period II B yielded for the first time fully backed blades. The other tools include retouched blades and burins, scrapers and borers on blades and flakes. The chief raw material used in this sub-period was jasper.

Sub-period II C shows for the first time a change in the use of raw material from jasper to chalcedony and reduction in the size of the tools. The industry consists of backed and retouched blades, burins and points. The burins were made on blades, flakes and cores. Sub-period II D shows a rich variety of tools. The blades are of simple, retouched, backed, long, pen-knife and crescentic types, the last-named variety occurring for the first time in this sub-period. The other tool types include varieties of points, including a large number of burins and few scrapers on blades and flakes. The burins are of two major types, truncated and dihedral, the other types being single blow, polyhedral, beak type, flat type, etc.

Sub-period II E shows an assemblage similar to that of the preceding phase, but differs from the latter in the occurrence, for the first time, of geometric forms such as triangles and trapezes and in the decrease in proportion of burins. This sub-period marks the end of the Upper Palaeolithic and the beginning of the Mesolithic.

The other finds found in association with the stone tools of this period include fresh water shells of *pupilla sp.,* a few fragmentary unidentifiable animal bones, one bead made of a shell of estuarine origin, *Olive sp.,* finished and unfinished beads and a number of ostrich egg-shell pieces. Dr Harrison of the British Natural History Museum, London, has identified the ostrich egg-shell pieces as belonging to the species *Struthio camelus.* A few pieces of ostrich egg-shell from sub-period II D and II E are engraved with criss-cross pattern between two horizontal bands.

Period III : This period is divisible into three sub-periods A, B and C, of which sub-period III A has been ascribed to the Early Mesolithic and the sub-periods III B and III C to the Late Mesolithic. The tools of this period are chiefly made on chalcedony. Sub-period III A yielded varieties of blades, lunates, triangles, trapezes, crescentic and other points and a small proportion of burins. The sudden decrease in the proportion of burins and an increase in the proportion of geometric forms are some of the important features of the industry of this phase.

Sub-period III B represents a wind-borne (loessic) deposit, indicating a distinct change in the mode of sedimentation at the beginning of the Late Mesolithic. The tool types of the preceding phase continued in this phase. Associated with the lithic artifacts were found tiny bits of charcoal and burnt clay lumps.

Sub-period III C is marked by the return of fluvial conditions as those occurring in the sub-period III A. The industry of this sub-period is marked by a distinct deterioration in the quality of finished tools.

This is the first open air site in India which has given a continuous sequence of Stone Age cultures from the Middle Palaeolithic to the Mesolithic through the Upper palaeolithic, the last-named culture being represented by as many as five phases. The evidence is so clear here that each sub-period or phase is marked by a change in the mode of sedimentation. Again it is for the first time in India that the ostrich egg-shell fragments have been found in the Late Pleistocene deposits. Dr Harrison of the British Natural History Museum, London, who examined the specimens, informs that it would not be surprising if a large ostrich had existed in India at this period.

38. EXPLORATION IN DISTRICT PUNE.—Sarvashri V. S. Wakankar, P. R. Kulkarni and Y. P. Mathapal explored a high level terrace of the Mulamutha river and found pebble tools embedded in the lower gravel of the terrace. There were two fine sand gravels and yellow silts. They are situated at least 25 m above the river bed. There are two silts at this lower level which were earlier identified by Dr H. D. Sankalia and had yielded Lower Palaeolithic tools. These two silts and gravels at such a high level clearly indicate that in Mid-Pleistocene times the river was flowing at this level and had gradually carved out its present course.

39. EXCAVATION AT INAMGAON, DISTRICT PUNE.-In continuation of the previous work *(1970-71,* pp. 25-26) excavation was resumed at Inamgaon this year by Dr Z. A. Ansari and Dr M. K. Dhavalikar of the Deccan College Postgraduate and Research Institute, Pune, under the general guidance of Prof. H. D. Sankalia. They were assisted by Sarvashri Y. S. Rasar, C. G. Padwal, R. B. Warke, V. K. Nagpure and M. G. Adhyankar. The objective of this year's work was to expose the house of the Malwa Period *(c.* 1600 — 1300 B.C.)

Period I.—A large house (pl. XXVII) covering an area of 6-65 X 442 m was exposed. The house was found divided into two compartments by a dwarf wall, over which probably rested the reed screen. In the north-eastern corner of the house was a circular mud-platform, 1-90 m in diameter. Such circular mud-platforms are still constructed today in houses in the surrounding region; they support large cylindrical storage bins. In the north-west corner of the house was found a hearth which was rectangular in shape and had disc-shaped clay stem, in the centre of which was embedded a flat rectangular stone. This was also covered by mud in order to support the cooking vessel. In one case a clay pan was found plastered to the central clay disc, obviously of ash, charcoal and lumps of burnt earth. In the same house were found a huge storage jar of the painted Malwa variety, embedded in the ground in the south-western corner, and a saddle quern in the south-eastern corner. But the most interesting objects from the house were four clay *kundas* of varying sizes which were carefully embedded in the ground within a shallow circular pit just by the side of the *chulah.* The clay *kundas* were in all probability used as moulds for making the bases of huge storage jars. The house could, therefore, have belonged to a potter.

To the south of this house was noticed a large pit-dwelling, roughly circular on plan. Its sides were perfectly vertical, and since the pit was considerably deep a step was provided on the southern side for descending. The floor and the sides were smoothly plastered with lime. There were a number of post-holes along the periphery for supporting the roof. On the east, the ground sloped to drain out rain water. On the north-east was found a two-armed hearth which probably belonged to the dwellers of the pit. Unfortunately, however, the dwelling pit was found considerably destroyed by later period silos.

Sub-period II A (c. 1300-1000 B.C.).—The most important discovery of this sub-period was an almost intact potter's kiln (pl. XXVIII). The kiln is like a huge trough embedded in the ground and appears to have been built *in situ.*

Sub-period II B.—An interesting discovery belonging to this sub-period is that of a lump of copper ore, rich in copper content. Equally interesting was a large cylindrical jar with flat base and holes in the rim for suspension (pl. XXIX A), found within a narrow pit. It may possibly be a jar for storing wine which could be taken out from the pit whenever required. A four-legged storage jar of clay (pl. XXIX B) was found in silo. It may incidentally be noted that a number of pit-silos were noticed in the houses located along the western margin of mound A.

40. EXCAVATION AT HATKAMBA, DISTRICT RATNAGIRI —In continuation of the last year's Excavation *(1970-71,* p. 27), Shri B. P. Bopardikar of the Prehistory Branch of the Survey, under the general guidance of Dr R. V. Joshi, assisted by Sarvashri P. R. K. Prasad, M. U. Qureshi, and K. S. Venkataramayya, resumed further excavation of the microlithic cave-site at Hatkamba in order to find out the stratigraphy of the floor deposit. The main objective of this year's work was to acertain the floor-level of the microlith yielding deposit and to correlate the same with the last year's excavated trenches. Five more trenches, one inside the cave (pl. XXXA), another near the facade of the cave and three outside the cave along the slope of the open ground (pl. XXX B) at different levels were excavated.

The generalized section of the five trenches consists of bed rock of weathered basal laterite rock, unevenly spread at the bottom, over which lies loose light yellow brown clay with chunks of laterite mixed with pebbles of chalcedony, chert and other secondary minerals. A few pebbles of quartzite and sandstone, foreign in the immediate surrounding, were also collected at the lower level. This is overlain by slightly loose lateritic yellow clay, at places mixed with weathered blocks of laterite. Over this lies a deposite of very loose brown dust mixed with rock fragments. Maximum depth reached inside the cave was 2-90 to 2-96 m and the minimum on the slopes outside was 40 to 20 cm. At different levels, large number of finished and unfinished microliths were collected along with waste flakes and nodules of chalcedony, chert and other secondary minerals. The trench inside the cave did not yield many microliths. The laterite at the cave locality does not seem to be of secondary type as it contains no extraneous material. The source of the raw material seems to have been at a fairly distant place.

The tool types consist of points, nicely worked either along one or both the margins, lunates and few borers. The excavation yielded a good number of blades and bladelets with or without retouch, along with some scrapers. The proportion of cores, which are of small sizes, is comparatively less. Not a single fragment of bone or pottery was found.

MYSORE

41. EXPLORATION IN DISTRICTS BELGAUM AND KARWAR.—In continuation of the work in Saurashtra and Konkan *(1971-72,* pp. 37-38) a reconnaissance survey of hill slopes near Belgaum and the coastal area around Gokarna and Karwar was carried out in March, 1973 by Drs R. V. Joshi, S. N. Rajaguru and R. S. Pappu of the Deccan College Post-graduate and Research Institute, Pune. During this survey, an open air Early Palaeolithic factory site was located on the hill slopes near Honge, situated about 10 km north of Belgaum. A few rolled Early Palaeolithic tools were also obtained from the Ghataprabha river-bed near Sutagatti 25 km north north-east of Belgaum.

In District Karwar, a few mesolithic sites were discovered near Hattikeri and Belekeri. The tools are made on quartz and comprise scrapers, points, flakes, blades, etc. The absence of the palaeolithic tools in this area may be due to the non-availability of suitable raw materials such as quartzite, and cryptocrystalline silica. This phenomenon will have to be ascertained by further exploration. The occurrence of depositional plane surface composed of laterite at an elevation of 40-50 m above the Mean Sea Level between Karwar and Gokarna, the presence of a dead cliff behind this surface and buried channel at a depth of 20 m below the Mean Sea Level at the mouth of Kali'at Kodibag near Karwar indicate changes in the relationship of land and sea-level during the Quaternary. That these changes are being effected during Holocene is indicated by the presence of stabilized dunes situated

slightly inland from the present active beach and by the changes in sedimentary facies below the present tidal and mud flats.

42. EXCAVATION AT VADAGAON-MADHAVAPUR, DISTRICT BELGAUM.—The Department of Ancient Indian History and Epigraphy and the Kannada Research Institute, Karnatak University, Dharwar, continued excavation *(1971-72,* p. 38) at Vadagaon-Madhavapur, under the direction of Dr A. Sundara and Dr B. K. Gururaja Rao.

In all, four trenches were laid out: two in Site-1, one each in Site 2 and Site 3. In order to further trace the remaining parts of the structure exposed last year in the Trench 1 Site 1, Trenches 2 and 3, each measuring 6 m square, were laid out on the southern side of Trench 1. Both these trenches were partly dug to an average depth of 2 m. In all, four layers, indicating three structural phases, were distinguished. Further lengths of the walls exposed last year in this trench were traced. The available remains are of two rooms of the structure and seem to date to *circa* first century A.D.

In Trench 3, remnants of brick walls with lime plaster were found in layers (3) and (4).

On removal of the baulk between Trenches 2 and 3, a part of a curved wall, probably the apsidal part of a structure, was found (pl. XXXI A). This was found to have been built on the debris overlying the remains of the early structure. The associated layer contained pottery of the first-third century A.D.

Almost contemporary with this structure, were found parts of a drain.

In Trench 2, natural soil was struck at an average depth of 4.35 m showing ten layers grouped as Satavahana (1-4), pre-Satavahana (5-8) and megalithic (9-10). The excavated pottery included unslipped coarse red, bright red, black-and-red and Russet-coated White-painted Wares.

Besides, beads of various materials like shell, terracotta, carnelian, lapis-lazuli were also recovered from various phases: Satavahana lead and potin coins came only from phase III.

To the north west of Site 2 and at a lower level, another trench, was laid out in Site 3. Excavation revealed remains of brick walls of a structure, and a few lead coins. On the western side of the long wall was found a drain (pl. XXXI B), with brick lining on the flanking sides.

43. EXPLORATION IN DISTRICTS BIJAPUR AND SHIMOGA.—Under the direction of the Director of Archaeology and Museums, Government of Karnataka, Shri M. L. Shivashankara carried out an exploratory survey of antiquarian remains of the submergence area of the Almatti and Narayanpur Dam sites of the Upper Krishna Project.

During the course of his exploration he brought to light Late Stone Age sites at Kudalasangama and Gaddedinne. The tools were made on chert and jasper and consist of scrapers, awls and points. Many of the large blades remind us of tools from the famous site of Salvadgi. Early historic sites, characterized by red-slipped ware, black-and-red ware and the well known Russet-coated Painted Ware, were located at Chimmalgi, Kalhalli and Tangadgi. Kalhalli also yielded one stray neolith.

A temple of the Chalukyan style was located at Devargennur. The famous *mandapa* at Kudalasangama, though looking modern, is constructed with the pillars that are usually found in the later Chalukyan temples. The temple at Devargennur is dedicated to God Kesava. At the entrance of this temple was found an inscription of the time of Chalukya Vikrama VI with a date corresponding to A.D. 1089.

Through the good office of Sarvashri K. P. Tejasvi, N. D. Sundareshan and Ramachandra Rao, neolithic implements were recovered from the site near the village of Ashoka Nagar and Bhagavatikere, Bhadravathi Taluk, District Shimoga. Discovery of neolithic implements futher west of Shimoga is of significance.

44. EXPLORATION IN DISTRICT KOLAR.—Shri C. Krishnamurthi, of the Southern Circle of the Survey, discovered two neolithic sites at Budikote and Banahalli in Malur Taluk, yielding ground stone tools, burnished grey, red, and black wares. He also located, ancient sites yielding black-and-red and red wares at Motakepalli, Ramasagara, Satampalli and Thongalakoppa, in Bangarpet Taluk, and Balaganahalli, Balleri, Baragur, Ghalaganahalli, Chikka-Iggalur, Doddasivara, Halepalya, Haraholli, Jayamangala, Kudanur, Repparahalli and Sivarapatna, in Malur Taluk.

He noticed megalithic stone circles at Adampalli, Biligirihalli, Gatickamadanahalli, Jangamanahalli, Kilkambhi, Mallampalli, Nachandapalli, Nagakuppa, Parandapalli, Sitampalli and Yattur in Bangarpet Taluk and Abhihalli, Bandur, Balaganahalli, Banahalli, Chakrabanda, Chalaganahalli, Chikka-Iggalur, Chikkakuntur, Doddakadature, Doddakalkuhalli, Hanumantapura, Hosahalli, Hunasekote, Malliappanahalli, Oblapura, Somasandra, Srikantapura, Virakaputra in Malur Taluk.

A neolithic site, earlier discovered by Shri C. Krishnamurthy, was subjected to trial sounding with a view to knowing any possible relationship between the neolithic burnished grey ware with other wares. The excavation revealed a two-fold sequence of neolithic and megalithic cultures with an overlap between the two.

ORISSA

45. EXCAVATION AT ASURGARH, DISTRICT KALAHANDI.—The University of Sambalpur and the Department of Cultural Affairs of the Government of Orissa jointly undertook an excavation at Asurgarh. The excavation work was directed by Dr N. K. Sahu, of the Department of History of the Sambalpur University. Two trenches were laid out within the fort to ascertain the sequence of cultures. The uppermost layer contained floors of houses paved with brick-bats. Associated objects included iron objects like axes, door hinges and hooks, and beads of semi-precious stones, punch-marked coins and pottery, ascribable to the first century A.D. It may be recalled that in 1958, a hoard of 539 punch-marked silver coins had been unearthed at the same site. A debris clearance in between the two trenches exposed a circular brick structure of *circa* fifth century A.D. The structure perhaps belonged to a temple of the mother goddess as evidenced by the find of a small terracotta-figurine of a goddess.

The second layer yielded various antiquities assignable to the period from first to fourth century A.D. An interesting mould for the preparation of beads and ornaments was also found along with a ground stone tool. An important find from this layer was a copper coin of Kanishka in a worn out condition.

In the upper phase of the third layer, assignable to *circa* third century B.C. black-and-red pottery was found in abundance together with black-polished pottery. Among other finds may be mentioned a piece of Chunar sandstone showing the characteristic Mauryan polish.

46. EXPLORATION IN DISTRICTS CUTTACK, GANJAM AND PURI.—During the course of an exploration of the Prachi Valley, Shri P. K. Ray, of the Department of Archaeology,

Government of Orissa, located: Durga Temple at Motia, P. S. Govindpur; Isvaranatha temple at Bharadwaj Ashram, Jiunti; and Chitresvari temple at Bolaragarh, P.S. Kakatpur. Besides medieval temples, were found at the following sites: Badakhira, P. S. Salipur; Mahasingpur, P. S. Salipur; Meripur, P. S. Mohanga, District of Cuttack; Bira-Pratapur, Birabalabhadrapur, Euguda and Chandeshwar in District of Ganjam; Biranarasinghapur, Kuruma near Konarak, Turuntiria and Vayalishati, P. S. Gop, in District Puri.

PUNJAB

47. EXPLORATION IN DISTRICT JULLUNDUR.—In the course of exploration in the District, Shri R. P. Sharma of the North-western Circle of the Survey located two early historical mounds at Nurpur and Sijaul. The ceramics collected from these sites consisted of red and plain grey wares. Among the forms in the former ware were vases and in the latter, incurved bowls in medium and coarse fabric.

Besides, early medieval mounds were also located at Mallian, Nakodar, Nurpur, Ranghra and Tant. These sites yielded knife-edged bowls, shallow dish-cum-bowls, deep basins, vases and *chilams* in red ware.

48. EXCAVATION AT SANGHOL, DISTRICT LUDHIANA.—In continuation of the previous year's work *(1971-72,* pp. 39-41), the Department of Archaeology and Museums, Govern ment of Punjab, under Shri S. S. Talwar, conducted excavation at Sanghol. The digging was resumed with two principal objectives: first to ascertain the relationship between the Late Harappan settlement and the Painted Grey Ware; and secondly, to expose fully the *stupa* complex which was partly unearthed during the last season.

During the present field season four fresh cuttings were made, three at SGL-2 and one at SGL-7. All these yielded the same sequence and finds as recorded during the previous year. The present excavation, however, failed to provide any concrete evidence regarding any inter-relationship between the Late Harappan (Bara) and Painted Grey Ware phases.

New trenches were also laid out at the small mound (SGL-5) with a view to exposing the structures associated with the Buddhist *stupa.* The whole complex seems to be constructed right on the natural soil. For purposes of construction, bricks (size: 34 X 23 X 6 cm) were used. Sometimes these bricks were found to be decorated with finger impressions.

RAJASTHAN

49. EXPLORATION IN DISTRICT JAIPUR.—Shri Vijai Kumar, of the Depatment of Archaeology, Government of Rajasthan, discovered several ancient sites in the vicinity of Jodhpura. *(O.C.P.=Ochre Colour Pottery ; P.G.W.=Painted Grey Ware; B.R.W.=Black-and-Red Ware; G.W.=Grey Ware, R.W.=Red Ware (Kushan); T.C. = Terracotta).*

District	*Name of Site*	*Wares and other associated finds*
Jaipur	Badhana	O.C.P.
,,	Badnagar	R.W.
“	Beedh Ki Jori	O.C.P., R.W., T.C.

District	*Name of Site*	*Wares and other associated finds*
Jaipur	Bhainsawal	O.C.P., P.G.W.
	Kalyanpur	R.W.
	Khedwala	O.C.P.
	Kiradot	P.G.W., R.W.
	Mandha	O.C.P., P.G.W., R.W., T.C.
	Purani Partheri	P.G.W., G.W.
	Purani Rewari	O.C.P.
	Rajnota	P.G.W., B.R.W., G.W., O.C.P.
	Ramjalra	O.C.P., P.G.W.

50. EXCAVATION AT JODHPURA, DISTRICT JAIPUR.—The Department of Archaeology and Museums, Government of Rajasthan, undertook excavation at Jodhpura located about 98 km from Jaipur on Jaipur-Delhi highway. The excavation work was directed by Shri Vijai Kumar under the general supervision of Shri R. C. Agrawala.

The ancient mound of Jodhpura (Taluk Kotputli), situated on the right bank of the river Sabi, forms a part of ancient Matsya-desa. Some time back Asokan inscriptions were also discovered in the neighbourhood of this site at Bhabru and Virata Nagar. The alternative name of the mound is Ghartool Ghat, so named after a local saint Ghartool Das, who is reported to have performed penance here some two hundred years ago. The main objective of the present excavation, however, was to determine the actual stratigra-phical position of the Painted Grey and black-and-red wares and their relationship with earlier ceramic industries, if any. With this end in view, three trenches A, B and C, measuring respectively 10 X 5 m, 5 X 5 m and 5 X 5 m, were excavated on the western side of the mound. The excavation established the existence of five cultural periods, extending from protohistoric to the end of Sunga-Kushan. The distinctive features of each period are summarized as under.

Period I is represented by the occurrence of the Ochre Colour pottery. Unlike the deposits at other sites, the soil yielding this pottery at Jodhpura, composed of yellowish earth mixed with *kankar,* appears to be free from any water logging and shows a thickness of 1 to 1.30 m. The pottery is orange to deep red in surface-colour and is turned on wheel. The general traits usually noted about this pottery at other sites, viz., rolled edges, porous, powdery surface, ill-firing, etc., are not present at Jodhpura. The commonest pottery shapes are bowl, vase, knobbed lid and dish-on-stand. A coat of thick slip can be noticed on a large number of sherds. Decorations include incised designs such as triangular notches between parallel lines, wavy and rectangular lines. On some of the sherds faint marks of parallel bands were also noticed. A distinctive feature of this period was the presence of indeterminate pieces of copper. Other associated finds include terracotta and stone beads.

Period II was marked by the use of plain black-and-red ware, represented mostly by the dish and the bowl. This ware seems to bear close affinity with that found at Noh (near Bharatpur) but is quite different from that of chalcolithic Ahar. A floor of mud lumps was also discovered from this level. Due to the limited nature of the excavation, it has

been not possible to determine the exact plan of the settlement. A bone spike was also discovered from this level.

Period III is characterized by the presence of the Painted Grey Ware. The black-and-red ware continues to be the principal ceramic industry during this period also. The associated antiquities include iron implements, terracotta ghata-shaped beads, bone spikes, and sockets and stone beads.

Period IV is marked by the occurrence of the N.B.P. Ware and unslipped red ware. Important finds of this period include iron arrowheads and nails, shell bangles, terracotta humped bull and a stone bead.

Period V is distinguished by the Sunga and Kushan pottery. Common shapes like bowl, lid-cum-bowl and lipped bowl with small spouted channels and sherds stamped with *triratna* and Svastika symbols were also obtained. Important antiquities of the period comprise iron implements, a terracotta *ghata*-shaped bead, a stone bead and a copper coin.

TAMIL NADU

51. EXCAVATION AT KANCHIPURAM, DISTRICT CHINGLEPUT.—The Department of Ancient History and Archaeology, University of Madras, resumed excavation at Kanchipuram. Two areas were selected for this field season's work: (i) in the vicinity of the Kamakshi Amman temple; and (ii) near Sarvatirtham tank to the north of Ekambaranathasvami temple. The aim of the excavation was to have a clearer idea about the association of the city with Buddhism, already indicated in the previous year's excavation by the occurrence of *stupa-like* structure in the lowermost level together with an inscribed potsherd. The total habitational-deposit in one trench was about 6 m and in the other about 3·50 m. This year's work confirmed the sequence, already established by the previous excavation.

The deposits in KCM-10 revealed three cultural phases with a subdivision in the earliest. In KCM-11, remains of only Periods II and III were recorded.

Antiquities of Period IA include beads of semi-precious stones and terracotta and a limited number of copper and iron objects. No structural remains were encountered though the use of bricks in the period was evidenced by the presence of a large number of brick bats. The presence of post-holes may suggest the use of bamboo or wooden poles for superstructure. In Period I B, fragments of Rouletted Ware (pl. XXXII A) and amphorea were found.

Period II yielded beads of glass, terracotta and paste, terracotta objects like toy wheels, gamesmen and ear-ornaments, copper and iron objects, terracotta human figurines with decorated headdress (pl. XXXII B) and coin moulds with a figure of bull incised on it. The ceramic industry was represented by a red-polished ware and a variety of slipped and unslipped red wares.

Period III, which was late medieval in date, was characterized by the occurrence of the coarse variety of slipped and unslipped red ware. Apart from pottery, the occupational deposits yielded beads, studs and decorated bangle pieces of glass.

52. EXPLORATION IN DISTRICTS KANYAKUMARI, RAMNATHPURAM, RAMNAD, THANJAVUR AND TIRUNELVELLI.—With a view to understanding the late quaternary conditions (i.e. upper Pleistocene and Holocene) along the eastern sea-board of south India, which has a crystalline base, and does not seem to be affected by any recent tectonics and

isostasy, Dr A. V. N. Sarma of the Department of Anthropology, Temple University, Philadelphia, undertook a survey in collaboration with the Archaeological Survey of India.

The project was begun from Gape Comorin, the southernmost tip of the peninsula. At this place, one could clearly notice approximately four coastal terraces, located at heights of 24-30m, 12m, 6m and 3m. Below the 3m terrace, within about 9m is the modern ocean level. All these terraces, excepting the 24-30m one, have dense development of corals. The corals belong in the main to the Procillopora genus. Since the corals found on these old terraces are of marine origin, we can say safely that old high sea levels prevailed in the past. In the order of our findings the following archaeological sites are being reported.

In District Kanyakumari at Kalluvilakkudiyiruppu, a two-component site was found, containing microliths and pottery. It appears, however, that it represents a 'matrix' situation, rather than two-different period of occupation. The site is located on the edge of the ocean, approximately at about 3-4"5m height.

In District Ramanathapuram, the most significant work done was at Rameswaram island. At Olaikkadu Mangadu and Pisasumundal were observed old corals at 3m and at 6m correlating with the observations at Cape Comorin and elsewhere. This would suggest that such land marks as Gandhamana Hill have been of recent formations. The recently-reported Teri formations at Rameswaram were investigated and were found to show totally different underlying factors as compared with those at Sawyerpuram.

In Ramnad District one dilapidated temple known as Pasi Amman Temple, belonging to the Chola Period was located at Kalianagari.

In District Thanjavur, most of the work was concentrated in quaternary contexts. Here, the United Nations Ground Water Project programmes had conducted an air photo-survey of the area. From the air photos it could be discerned that there are the 3, 6, and 12m terraces in the Cauvery mouth region. Much of this area is now under cultivation. On examination of the wharf, excavated by the Survey at Kilaiyur, it was found that the wharf is at about 3-3-6m in height. This evidence was important in pinning our 6m terrace, as a positive oscillation of the sea around 250 B.C. to A.D. 100 or so. This 6m terrace checks up elegantly with the physical location of Nettamedu, Arikamedu, etc. It seems possible to suggest now that some of the coastal trading stations around the turn of the century went out of use due to the silting of the rivers as it has been usually argued. Work along the mouth of the Palar river showed the existence of terraces at 3, 6 and 12m heights, correlating well with earlier evidences at Cape, Tirunelveli, etc. The evidence of 12m terrace at Palar legitimately raises the question of the shift of Palar drainage to a much more prehistoric time than the recent periods. During the course of this work, the ancient site at Vayalur, so called Vasavasamudram complex, was also visited. Its location at about 6m in height indicates that it was not a coastal port of Pallavas, as the sites of these periods are found at heights much less than 6m. It is more likely, therefore, that Vasavasamudram complex is associated with Roman times, a fact in part supported by archaeological findings.

In District Tirunelveli the project concentrated its efforts. Along with the location of sites some pertinent environmental information was also collected.

Idindakarai: The site is located on the coast along the (new) Cape Comorin to Tiru-chendur road, and shows extremely dense development of red soil, porous and compacted (Teri). The site is composed of several components and is located at heights varying from about 6m through maximum of 32m. There is a loose scatter of microliths, pottery, a megalithic burial and porcelain.

Sawyerpurarn Complex: Late Stone Age sites were located in different areas in Sawyerpuram like Minparuthi Odai, behind the present Pepe's college Campus and Mangalagiri, where the Odai splits into two: Ombodu and Pangali Kadu. Field observations indicate that the Teris are quite extensive here with some areas showing dense compaction with the associated porous conditions (weathering?). Most of the stone tools were made of chert, jasper, quartz, which are all not indigenous to the area. The location of Sawyerpuram is 20 km from Tuticorn and Srivaikuntam, about 48 km from Tirunelveli-Palamcottah. Karampallam Tank is an interesting place for Quaternary research. On the fringe of the tank, numerous small villages, some like Periyanak and Pudukkottai are full of non-mineralized marine shells. The beds at Pudukottai yielded oysters areas, anamalocardias, conids, turritellas, vertebrate bones, most important of which is the snout part of a crocodile. At these areas, shells are exposed during a rainy period, "especially when water recedes from the temporary puddles. These deposits suggest that during terminal Pleistocene period, possibly after the onset of the Holocene, extensive swampy areas had developed here in which many animals may have got bogged. At Ayyaniduppa and Savamalai, deposits of animal bones have been reported.

A survey of the coastal south India yielded evidences of past sea level fluctuations at 3, 6, 12 and 24-30m in height. The 6m terrace was associated with archaeological remains of the close or the early centuries of the Christian area. The 3 m one may have belonged to sixth-seventh century A.D. The 12-15 m ones were closest to the microlithic sites. Perhaps by inference they could be dated around 10,000 B.G. inferred on the evidence of high sea levels from other stable regions of the earth.

54. EXCAVATION AT KAVERIPATTINAM, DISTRICT THANJAVUR.—Dr K. V. Raman, assisted by Shri T. S. Iyengar of the Southern Circle of the Survey, resumed excavation in the Pallavanesvaram site where, in the 1963-65 excavation, a Buddhist *vihara* with a Buddha image in bronze and a Budhapada was unearthed. The purpose of the present excavation was to know the extension and plan of the *vihara* (pl. XXXIII) and its relationship with other buildings, if any. After demolishing the present day houses, the area south of the *vihara* was subjected to excavation. On the south of the *vihara* was exposed a huge structure (pl. XXXIV) in baked brick, rising to a height of 1.95 m from the bottom of the sand foundation. It is square on plan, built in *pancharatha* style with recessed projections on three sides, except east where there appears to have been the entrance. It has a hollow square in the centre, measuring 4.15 m filled with sand up to the plinth level. On the three sides north, south and west, there are two double squares on each side and two single squares on the remaining side, viz. east. These are probably cellular foundation of chambers meant for raising piers. The extant plaster indicates that the superstructure was plastered in lime. As the Budhapada and stucco *dvarapala* figures were found in the same area, it was in all likelihood the layout of a *stupa.* Moulded bricks were used in the building for its members such as pillars, plinth, abacus, etc. The temple appears to be later than the *vihara* and "can be dated to the sixth-seventh century A.D., especially on the evidence of Tamil numerals found on one of the stone pillars exposed in the excavation at the same level. The superstructure would have very much simulated the brick-built *stupa* of Nagapatinam. It also supports the evidence of the spread and continuance of Buddhism in Tamil Nadu.

A brick structure south of *vihara,* in fourteen courses, built on sandy foundation with three walls in south, north and west, having a projecting platform in the middle of western wall, appears to be a broad hall, contemporary with the *vihara.*

Not many antiquities were recovered from the excavation, the noteworthy finds being a few terracotta figures, a stucco Yali and a few stucco figures.

UTTAR PRADESH

55. EXCAVATION AT PIPRAHWA, DISTRICT BASTI.—Excavation at the site was resumed by Sarvashri K. M. Srivastava, Lalchand Singh, Birendra Nath and Daneshwar Prasad Sinha of the Mid-eastern Circle of the Survey. This year's excavation resulted in the discovery of thirty-one terracotta sealings, giving a clue to the location of ancient Kapilavastu, the capital of the Sakyas. The sealings (pl. XXXVA), found in one of the verandahs of the eastern monastery, at a depth ranging between 1-05 to 1.55 m, are inscribed in Brahmi characters of the first-second century A.D. There are two legends on the sealings, one reading *Om Devaputra Vihare Kapilavastu Bhikshu Sanghasa.* With a quadrangular plan, the monastery (pl. XXXVI) has a central courtyard with brick floor ing (pl. XXXV B) enclosed by verandah and cells all around. There are in all thirty-three cells in the monastery with an entrance on the west. The sealings precisely indicate that the monastery in which they have been found belonged to the order of monks of Kapilavastu. It could be inferred therefrom that the ancient city of Kapilavastu must be in the immediate neighbourhood of the *stupa* and the monastery.

A section across the *stupa* confirmed that it was built in three stages (pls. XXXVII & XXXVIII). The monastery towards the south of the *stupa* yielded the NBP Ware, punch-marked, Kushan and Ayodhya coins, polished stone weight, copper bowls and antimony rods.

56. EXCAVATION AT JIWANGARH, DISTRICT DEHRADUN.—As a sequal to the report regarding the occurrence of inscribed bricks belonging to the second century A.D. (pl. XXXIX A), a small-scale excavation was conducted at Jiwangarh by Shri R. P. Sharma of the North-western Circle of the Survey.

The excavation revealed a brick platform raised over a rubble soling. It was built of re-used bricks of earlier period. A few of the re-used bricks, bearing inscriptions in Brahmi characters of first-second century A.D., were found either laid against mud-mortar or on the edge.

The structural as well as the material evidence available from the cuttings suggest that the platform was constructed in medieval times.

EXPLORATION IN DISTRICT DEHRADUN.—Sarvashri R. P. Sharma and B. P. Srivastava of the North-western Circle of the Survey located an ancient mound near Kalsi, famous for the rock-edict of Asoka. Approximately 1-2 m thick occupation deposit was noticed.

Surface collection from the mound included incurved dishes and bowls in plain grey ware of thick fabric, carinated *handi,* medium-sized vases in red ware. The collection from the site strongly suggests the existence of a modest settlement near the rock-edict of Asoka in Mauryan times. The site, however, did not yield any N.B.P. Ware. The site seems to have been under occupation also during medieval times, as evidenced by the find of basins, storage jars in red ware of medium to thick fabric and medieval grey and glazed wares.

57. EXCAVATION AT SONKH, DISTRICT MATHURA.—In continuation of the previous year's work, *(1971-72,* pp. 47-48) the German team, under Prof. Dr H. Haertel resumed excavation at Sonkh. The team consisted of two architects, three technicians and two

students of Indian archaeology and art of the Berlin University (West). The objectives of this seaon's work were: (a) to continue the excavation of the area of the apsidal temple no. 2 in the trenches So 6 III-IV/Cb—Cc; and (b) to resume horizontal digging in the pre-Kushan settlements in parts of the area already under excavation (2 V—3 I/Ca-Cc).

The pillared apsidal temple no. 2, excavated in 1971-72, had been a temple dedicated to the Naga cult. It had been enclosed by a stone railing which had at least one gate to the south, the remains of which show carvings of Naga scenes. In the present field-season, several more such items of naga origin were found: a Naga-kanya. with three-headed cobra hood (stone); a pot-bellied reading naga, the *upper* body of which is theriomorphic, whilst the lower part is human (stone); several terracotta naga items, among which a seven headed-canopy and a human head of a Naga in clear Kushan style are of special importance. The most astonishing finds were clay moulds, taken from the main stone relief of the southern gate, and used for the producation of terracottas. Remarkable are also green glazed pottery tubes and fragments of early Kushan date. Judging from the coins found in the level of the naga temple phase, it has to be dated to the period of Kanishka.

While digging the adjacent ground of the temple, an older compound wall and a row of pillar foundations appeared which include even the side of the entrance. The baked bricks of the older compound wall are of the same size as the mud-bricks of the apse (48 X 23 X 7 cm). The bricks of the lower pillar group were of the size: 42 X 29 X 7 cm. Remains of roof-tiles lay on both sides of the old compound wall. Terracotta bricks of both sizes (48 cm and 42 cm) and plenty of roof-tiles of the same shape were likewise found in the structures of the houses. Since the level (27) belongs clearly to the period of Suryamitra, this older phase of the apsidal temple no. 2 is to be placed in the first half of the 1st century B.C. Unfortunately, it cannot be ascertained as to which cult did the older sanctuary pertain.

The horizontal digging in an area of 2000 m in the pre-Kushan settlements in So 2 V—3 I/Ca—Cc provided the missing link between the lower levels, previously excavated in the old trench 1, and the lowest Kushan level. The sequence of the 37 levels at Sonkh can, with a few uncertainties left for the final research, be tabulated as follows :

Levels	Cultural association
1 to 15	3rd—19th century A.D.
16	Vasudeva + Kanishka III
17	
18	
19	Huvishka
20	
21	Kanishka I
22	Wima Kadphises—Kanishka I

Levels	Cultural Association	
23		
	Kshatrapas + Ramadatta, Kamadatta	
24		
25	Brahmamitra Vishnumitra	(c. 60-20 B.C.)
26	Suryamitra	(c. 80-60 B.C.)
27	Gomitra	(c. 100 B.C.)
28		
	Late Sunga	(c. 130-100 B.C.)
29		
30	Sunga	(c. 180-130 B.C.)
31		
	Maurya	
32		
33		
34		
35	Painted Grey Ware	(c. 600 B.C.)
36	black-and red Ware	
37		

There is no doubt that the Mitras of Mathura started their reign only about 100 B.C. and not, as so often stated, in the end of the third century B.C. Four coins of Suryamitra, all from the level (27/26), and single coins of Brahmamitra and Vishnumitra follow the lowest Mitra coin, of Gomitra from level (28/27). The lower levels show only copper and silver punch-marked coins. The Mitra period ends in level 25. In levels 24 and 23, several Kshatrapa coins (Hagamasa, Rajuvula, Sodasa), along with a few Datta coins were found in different rooms of houses. In the upper building-phase of level (23), the pre-Kushan pottery starts to get mixed with remains of stamped pottery of Kushan fabric which becomes fully in vogue in level (22) and upwards till level (16). It should be mentioned that below level (27) only mud-brick structures could be traced; the baked brick phase of settlements at Sonkh starts only with level (27) upwards.

58. EXCAVATION AT SARAI NAHAR RAI, DISTRICT PRATAPGARH.—The Department of Archaeology, Government of Uttar Pradesh, continued excavation at the Late Stone Age site of Sarai Nahar Rai, in collaboration with the Allahabad University. The work was directed by Prof. G. R. Sharma. The excavation brought to light several skeletons, charred as well as uncharred animal bones, and microliths.

WEST BENGAL

59. EXPLORATION IN DISTRICTS BURDWAN AND 24 PARGANAS.—Shri D. K. Chakravarty of the Department of Archaeology, Government of West Bengal, discovered fragments of

black-and-red and plain red wares on the eroded surface of a high mound at Bera Belun in District Burdwan. Locally known as Baneswar Danga, the ancient site represents a 8-m high mound along the ancient Brahmani river, a tributary of the Bhagirathi. The other findings obtained from this site include burnt fragments of mud plaster, bearing impressions of reed.

Shri P. C. Das Gupta, assisted by Dr S. C. Mukherji, and Shri S. K. De, explored an extensive chalcolithic site known as Jakher Danga at Eruar close to the meandering bed of the Brahmani in District Burdwan. The site was visited following information supplied by some local inhabitants. The ancient site yielded fragments of black-and-red ware and lustrous red ware, similar to those found at Pandurajar-Dhibi. The antiquities recovered from the site include a few microlithic flakes and a small neolithic celt.

In District 24 Parganas, an early historical site was located at Mochpol, close to the dried-up bed of the Lavanyavati, a tributary of the Vidyadhari. The site lies about 24 km to the north-east of Calcutta. Being close to the Sub-divisional town of Barasat, its distance from Chandraketugarh lying further east is about 25 km. Apart from the occurrence of early historical pottery, the. site also yielded perforated tiles and lumps of clay, bearing impressions of reed or split bamboo.

Shri P. C. Das Gupta also re-explored the previously-reported sites of Chandraketugarh and Deulpota in the same District and Tamluk in District Midnapur and collected pottery, terracotta figurines (pl. XXXIX B and C), etc.

60. EXCAVATION AT BHARATPUR, DISTRICT BURDWAN.—In continuation of the previous year's work *(1971-72,* p. 50) the Eastern Circle of the Survey, in collaboration with the University of Burdwan, under the direction of Dr S. C. Ray, assisted by Sarvashri K. P. Gupta and Bimal Banerjee, resumed excavation at Bharatpur with a view to ascertaining the foundation of the *stupa* and also to knowing the cultural sequence of the site. The trenches, measuring 10 x 10 m, were laid on the western and southern periphery of the mound.

The excavation revealed that the *stupa,* which is square on plan, consisted of 33 courses of burnt-bricks (extant height). It rested over a compact yellow clayish earth about one metre above the natural soil. A thin deposit of coarse sand was spread at the base of the foundation. Two sizes of bricks were used in the construction: 30 X 8 X 7 cm and 48 x 21x6 cm. The *stupa* had five projections; its facade shows corbelled and moulded courses which bear traces of lime plaster. Above the corbelled courses the platform was provided with niches one on each projection to accommodate an image of Buddha.

The other trench yielded a neolithic-chalcolithic habitation at the bottom, followed by an early iron age culture, after which the site remained deserted till the period of the construction of the *stupa.* Ceramic industries, associated with the earliest culture included the characteristic painted and plain black-and-red ware, black-on-red and buff-on-red wares. The shapes represented in the different wares were found to be similar to those found from the earliest deposits of Mahisdaland Pandu-rajar Dhibi. The design repertoire was essentially linear, such as wavy lines in groups, vertical and horizontal bands and oblique strokes. Among other finds mention may be made of: objects of bone and antlers; neolithic celts; microliths; and beads of semi-precious stones. The use of copper was scarce. Since the excavation was on a limited scale, no house plan of this culture was encountered. It is worthwhile mentioning that two hearths of open variety, approximately 50 cm in diameter, were found in two succeeding habitation layers.

The succeeding phase was marked by the introduction of early medieval pottery, iron and other associated material. The course and gritty black-and-red-ware of historical period was also noticed. A few terracotta objects and beads were among the other finds obtained from the excavation.

61. EXCAVATION AT RAJBADIDANGA, DISTRICT MURSHIDABAD.—In continuation of the previous season's work *(1971-72,* pp. 50-51) excavation on a limited scale was resumed at Rajbadidanga by Prof. S. R. Das, assisted by teachers, students and other members of the Department of Archaeology of the University of Calcutta, with a view to obtaining complete plans of structures exposed in the previous season.

Five new trenches, labelled A-l to B-3, measuring 6 x 6 m, were undertaken for excavation. With a view to tracing the south-western corner of the main monastery wall, exposed during the last season in trenches A-9 and A-10, digging in trenches A-l to A-3 and B-2 and B-3 was continued

In trenches C-l to C-3, digging was carried out at depths varying from 2'69 m to 1 '52 m below surface. Structural remains belonging to Phases 11-VI were exposed in different levels. The long wall contained a drain channel at its base. Unfortunately, ground plans of all exposed structures could not be obtained. In trenches C-l- C-2, besides exposing completely an oblong structure, measuring 5-72 x 5-11 m belonging to Phase V, the south-eastern corner of which was partly exposed during 1965 in trench B-I, remains of several structural complexes were uncovered. In trench C-3, deep digging was continued up to a depth of 2-69 m, exposing thereby structural remains of Phase II. In trenches B-2 and B-3 structures of at least two phases were uncovered. In trench B-2 part of brick-on-edge flooring was found on the eastern side of the main structure.

The excavation yielded a large number of antiquities, including many complete and fragmentary inscribed terracotta seals and sealings of various shapes and sizes. They were mostly retrieved from the intermediate level of the excavated trenches. Most of these seals are fragile and have defaced legends. Five of these seals bear the usual motif *(dharmachakra* flanked by two deer) and two lines of inscription. But the legends inscribed on all these five seals are not identical. One of the seals contains the legend: *Sri Raktatnrittikd Mahdvihd-rakaryabhikshu Sanghasya.*

Another bears the following legend : *Navahatte tamavani-ka bhikshunam.* Here, the name *Tamavani* is extremely significant. If it is taken as *Tamapani* (*Tambaparni*— *Taprobane* of the Greeks, *Tamravari* of modern times), it may be presumed that the *Bhikshus* and lay worshippers from south India might have visited Raktamrittika monastery in West Bengal.

This contention is attested by another inscribed seal bearing south Indian Pallava script discovered during 1970. Another seal bears the following legend:

(Dha)rmade (va)sya daovalara..

Vihara..

Other seals contain legends bearing monastery and personal names, such as, *Thu(pa) rama Lanuva Cha(ndra) Kasya, Saradamasya Vigajita, Sricha..., Sarvachandra, Nagaji vinasya Va (rvaji),* etc. One seal bears an impressed sun-symbol. Another extremely interesting seal, recovered from the surface of Rakshasidanga mound, bears the representation of a bull and below, one line of inscripton reading *Atyugrakkasya, i.e.,* belonging to the sect *of Atyugra(Siva).*

Besides, there are some seals bearing multiple impressions. One of such seals bears five impressed areas, each of which contains representation of an elephant. Another

fragmentary seal, bearing several impressions, contains identical name of Igata. Most of these seals have been recovered from debris layers in trenches G-l-C-3 at depths varying from 1.3 m to 2.42 m corresponding to the cultural period II. Palaeographically, all these seals are to be attributed to a period ranging from *circa* fifth-sixth to seventh-eighth century A.D. This dating agrees well with the previously proposed date of period II.

Pottery was found in plentiful and was represented by fragments of pitchers, pans, dishes, plates, lamps of various shapes and sizes and sprinklers. Some highly polished grey, black, orange and red coloured sherds were obtained mainly from the intermediate level. Other terracotta objects included cones, flesh-rubbers, stoppers, decorated gamesmen, besides toy-carts and human and animal figurines. Of metal objects, the most important find of this season's excavation was a small and thin gold plate, bearing two perforations at each of its ends and embossed signs on its both surfaces. Other copper and bronze objects recovered from different levels included bangle fragments, rings, plates, one votive *stupa,* etc. Iron objects included nails, spoons, chisels, arrowheads, etc. Several agate and crystal stone beads of different shapes and sizes were also recovered. Of the many stone pieces of different categories, one phyllite stone toy cart-wheel is noteworthy.

Structural remains and other finds discovered during the present season's excavation are to be attributed to three cultural periods dating from *circa* fourth-fifth century to eleventh-twelfth century A.D. The discovery of several inscribed seals bearing *Raktamrittika* legends lends further support to the identification of the *Raktamrittika* monastery of Hiuen Tsang's accounts with the present site of Rajbadidanga, now under excavation.

H. EPIGRAPHY

SANSKRITIC AND DRAVIDIC INSCRIPTIONS

ANDHRA PRADESH

1. INSCRIPTION, KADAMALAKALVA, DISTRICT KURNOOL.—This is a label inscription of Satyasraya-bhatara.

2. INSCRIPTION, KODUMURU, DISTRICT KURNOOL.—The inscription of Hariyappa Odayalu (Harihara I), of the Sangam Dynasty of Vijayanagara empire, dated Saka 1261 (A.D. 1339) mentions that Harihara is a Bhandari (treasurer) which confirms the tradition and literary evidence that the founders of the Vijayanagara empire were originally the treasurers in the service of Kakatiya Prataparudra.

3. INSCRIPTION, SANGAMESVARAM, DISTRICT KURNOOL.—This Kannada inscription in characters of about the 9th century mentions *perggade* (Me)la(pa)yya.

4. INSCRIPTION, ALAMPUR, DISTRICT MAHABUBNAGAR.—This inscription belonging to the time of Vikramaditya, son of Pulakesin I, wherein the king is styled as Anivarita Vikramaditya, records the donation of certain *nivartanas* of land by his queen Mahadevi to a Brahmin Pishti Sarman of Vardhamanigrama.

5. INSCRIPTION, CHANDUPATALA, DISTRICT NALGONDA.—This inscription of the time of Kakatiya Prataparudra states that the death of Rudramahadevi occurred in Saka 1212 (A.D. 1290) as against the current theory of Saka 1218 (A.D. 1296).

6. INSCRIPTION, HUZURNAGAR, DISTRICT NALGONDA.—This inscription is dated Saka 1167 (A.D. 1245) of the time of Kakatiya Ganapati and mentions the genealogy of the minister Manchena and speaks that Manchena was the author of a *kavya,* in Sanskrit, *Raghunatha Ramacharita.*

ASSAM

7. CAVE INSCRIPTION, SURYA PAHAR, DISTRICT GOALPARA.—Engraved in Nagari characters of the 8th century inside a cave in Surya Pahar, this inscription in a single line reads *snu iva dandaha.*

8. INSCRIPTION, SARUPATHAR, SUB-DIVISION GOLAGHAT.—This fragmentary inscription in late Brahmi characters of about 500 A.D. and Sanskrit language, refers to one Mahattara Brahmadatta and records the boundaries probably of a land gifted. The other details are lost.

DELHI

9. MUGHAL INSCRIPTION, NEW DELHI.—Dated Vikrama 1596, Saka 1460 (A.D. 1538), the Sanskrit portion of this bilingual inscription records the construction of a step-well by the local chief (name lost) described as *Rqjadhiraja Paramavaishnava,* son of *Tka sri* (name lost) of Gadiyalapura *gotra* and Kshatriya *anvaya* during the reign of the Mughal emperor Humayun at Joginipura (i.e. Delhi). Also mentions *Mira* Pakira Ali as the administrator of Dhilli (i.e. Delhi).

GUJARAT

10. COPPER-PLATE CHARTER, VANTHAVALI, DISTRICT KHEDA.—This charter belong ing to the Maitraka ruler Dharasena IV of Valabhipur, dated Valabhi era 330 (A.D. 648) records the grant of land in the village Vaddasomalika (Vanthavali) to a Brahmin of District Kheda. It has a royal seal of a bull.

11. STEP-WELL INSCRIPTION, MANDVI, DISTRICT PANCH MAHALS.—This inscription (pl. XL) in Sanskrit and Gujarati dated Vikrama 1554 and Saka 1419 (A.D. 1497), records a grant of two plough of land to a Joshi Vijayaditya by the officer Malek Sandal Sultani of Mahamal Bagada (A.D. 1459-1513).

MAHARASHTRA

12. INSCRIPTIONS, BOMBAY, DISTRICT GREATER BOMBAY.—Dated in Saka 1204 (A.D. 1282-83), this inscription in Kannada characters and language, engraved on a slab kept in the Prince of Wales Museum, Bombay, records the death of Basaveya-nayaka after felling three adversaries in a battle he had fought against thirty persons on the road to Sogala. An undated Kannada inscription engraved in characters of about the 12th century on a zodiac stone kept in the same Museum records that Gumdisetti of Hiriyakeri caused the *suryya-kirana* to be made.

13. COPPER-PLATE CHARTER, MASOD, KAMTEE, NAGPUR.—The charter consisting of five plates belonging to the king Pravarasena, Vakataka dynasty dated in the 19th regnal year of the king, records the grant of land to Brahmanas under the witness of Senapati Katyayana.

14. COPPER-PLATE CHARTER, MUHURZARAI, NAGPUR.—This charter belonging to Vakataka king Pravarasena II is acquired by the Central Museum, Nagpur.

15. INSCRIPTION, PANHALE KAJI, DISTRICT RATNAGIRI.—A defaced stone inscription in Brahmi script is discovered in one of the caves at Panhale Kaji. Another stone inscription in Devanagari script is discovered in front of the same caves.

16. SILAHARA INSCRIPTION, SATARDA, DISTRICT RATNAGIRI.—A Kannada inscription in characters of about 13th century belonging to the reign of Vira Bhojadeva II, of the family of Silahara of Karad, ruling from Pranala-durgga, records the gift of 15 *gadyanas,* 9 *khandugas* of paddy and pulses, etc., for worship and offerings to the god Sakalesvaradeva at (Sama)nta (nam) vada by Vittha (la)-prabhu, son of Bappadeva-prabhu of Kalakhandi.

The gift was entrusted to the *asesha-mahqjana,* the *sthanapati* and others for conducting the annual festivals etc., at the temple *(contra, Progress Report of the Kannada Research Institute for 1953-57,* p. 8).

17. CHALUKYA INSCRIPTION, BHALAVANI, DISTRICT SANGLI.—This Kannada inscrip tion, belonging to the reign of Chalukya Taila III and dated in his regnal year 8 (A.D. 1156) mentoins the king's feudatory *Mahamandalesvara* Bijjanadevarasa of the Kalachurya family and the latter's subordinate *Kumaranarayana* Mailugidevarasa in charge of the adminis-tration of Karashada-400, and registers grants of land, a flower garden, an oil-mill and a house for *bhandapatra,* for the purpose of worship, offerings and renovation (in the temple) of Gavaresvara of Bhalavanige, referred to as the headquarters of the sub-division *Elum--hanvradu* adjoining Karahada-400, by *Mahapradhana* (Sau)vananayaka, *Karana* Chavana-nayaka and *Karanadhyaksha* Nagadeva-nayaka.

MYSORE

18. INSCRIPTION, KAMPLI, DISTRICT NORTH KANARA.—This Kannada inscription on a pillar, of which the beginning is lost, in characters of 7th-8th century, records the grant of the village Moriyavalli by Dharmma-senavara and another grant of the village Payveyur, made for the *devabhoga* of Kampilli, by Ajavaramma, son of *maharaja.*

19. INSCRIPTIONS, PALA, DISTRICT NORTH KANARA.—Of the two inscriptions in Kannada language and characters, one, a hero-stone in characters of about the 8th century, which belongs to the reign of a Kattiyarasa, records the death of a hero in a battle. The other, dated in Chalukya Vikrama, year 8 (A.D. 1083), belonging to the reign of Tribhu-vanamalla (Vikramaditya VI), records that *Mahamandalesvara* Singarasa, who was adminis tering Hanungal-500, and other officers made a grant of the village of Kiriya Hingalage to the gods Omkaresvaradeva and Bagalesvaradeva for maintenance etc.

20. CHARTER OF SADASIVARAYA, SHIRALI, DISTRICT NORTH KANARA.—Dated Saka 1483 (A.D. 1561) this copper-plate inscription engraved in Sanskrit and Kannada languages and Nandi-Nagari characters, records the grant made by the Vijayanagara emperor Sadasivaraya of the village Kabbali situated in Hasana-sima as *sarvamanya* to Narasa-pandita, the son of Tippana-pandita and grandson of Ahobala. The record was composed by Sabhapati Svayambhu and engraved by Viranacharya, son of Virana.

21. TWO STONE-INSCRIPTIONS, ANEGONDI, DISTRICT RAICHUR.—Of the two inscrip tions, engraved in Kannada language and characters, the first one, dated in Saka 1271 (A.D. 1349), belongs to the Vijayanagara prince Savamnna-vodeya, son *(kumara)* of Harihara I, and seems to record a grant of land to the god Kapilesvara-deya of Bhaska-rakshetra in Hastinapura, evidently modern Anegondi, described as Dakshina-Varanasi. The second, dated in Saka 1247 (A.D. 1325), appears to refer to the *nisidhikas* of probably a *rayarajaguru.*

22. VIJAYANAGARA INSCRIPTION, HIRE JANTAKAL, DISTRICT RAICHUR.—This Kannada inscription, dated in Saka 1466 (A.D. 1544), belongs to the reign of Sadasiva and records the grant of lands to different deities and individuals for the merit of the king,

mahamandalesvara Ramaraja and his brother Venkatadriraja, by the latter's *karyakartta* Demaraseyya of Chandragiri.

23. FOUR VIJAYANAGARA INSCRIPTIONS, KANAKAGIRI, DISTRICT RAICHUR.—All these four inscriptions, in Kannada language and characters, are engraved continuously on one slab and, on palaeographical grounds, they may be assigned to the 16th century though they are dated indifferent Saka years, viz., 1358 (A.D.1436), 1410 (A.D. 1488), 1434 (A.D. 1512), and-1455 (A.D.H533) respectively in the reigns of Praudhadevaraya, *Saluva* Narasingadevamaharaya, Krishnadevaraya and Achyutadevaraya. The first, second and fourth inscriptions record the grant of a few villages by the respective kings for maintaining the services to the god Kanakagirinathadeva while the third records the grant of certain taxes also in addition to a few villages to the same deity for the same purpose by the ruling king.

24. CHALUKYA INSCRIPTION, VIPRA, DISTRICT RAICHUR.—This Kannada inscription, dated in Saka 981 (A.D. 1059), belongs to Trailokyamalladeva (Somesvara I) and records the grant of land in the village Vipranarayana, money and a village called Musuta for the services of the god Achalesvara, on the occasion of the lunar eclipse.

25. INSCRIPTION, POLALI AMMUNAJE, DISTRICT SOUTH KANARA.—Engraved in Kannada language and characters of the 10th century on the lintel of the *garbha-griha* of the Rajarajesvari temple at Polali Ammunaje, this inscription in a single line reads *Karanada Mandina Vasudevan Iddan.*

26. VIJAYANAGARA COPPER-PLATE CHARTER, VARANGA, DISTRICT SOUTH KANARA.—The charter which is in Sanskrit language and Nandi-Nagari script, belongs to the reign of Devaraya II and is dated Saka 1351 (A.D. 1429). It gives the geneology of the dynasty commencing with Bukka I and registers a grant of the village Matangakali situated to the north-east of Kudukapura, north of Barahakanyapura in the Tuluva country together with its *ashtaisvaryas* to Vishnusarma, son of Sridhara of Kasayapa *gotra* and *Yajuh-sakha,* by the king.

ORISSA

27. COPPER-PLATE CHARTER, KALANDA, DISTRICT BALASORI.—The charter belongs to a king of Pala Dynasty.

28. COPPER-PLATE CHARTER, DARA, DISTRICT GANJAM.—The charter consisting of three plates, having a seal showing a counchant bull, lotus and moon, belongs to Udayakhadi, Kadamba dynasty, a fudatory of Gangas.

RAJASTHAN

29. JAINA INSCRIPTIONS, ARTHUNA, DISTRICT BANSWARA.—An inscription, on a pedestal lying outside the sculpture-shed and engraved in Sanskrit language and Nagari characters, is dated Vikrama 1248 (A.D. 1191-92) and records the perpetual obeisance of Malika, the son of Amva to Mallinatha and mentions Sri Vinayakirtti, the disciple of Mahendra-kirtti. Another inscription on a pedestal lying outside the Jaina temple is engraved in Sanskrit language and Nagari characters. Dated in Vikrama 1296

(A.D. 1239-40), it records the obeisance of Ula and Vira, the sons of Maliga and his wife Raju. Maliga is described as the disciple of *acharya* Charukirtti or Mathura *anvaya.* Also records the obeisance of Sada, Maidha, Mala and Dhara, the sons of Chikava. A third inscription, on the pedestal of the image of Vimalanatha, engraved in Sanskrit language and Nagari characters, is dated Vikrama 1514 (A.D. 1457-58) and records the consecration of the image by *Bha* Sakalakirtti and *Bha* Vimalendra belonging to the *patta* of *Bha* Padmanan-dikirttideva of Mula-sangha, Sarasvati-(gachchha) and Kumdakundachary-*anvaya.*

30. INSCRIPTION OF VIKRAMASIMHADEVA, ARTHUNA, DISTRICT BANSWARA.—A damaged inscription on a pedestal lying loose outside the Siva temple, engraved in Sanskrit language and Nagari characters of the 13th-14th century, is dated Vikrama 55 (probably for Vikrama 1355—A.D. 1298-99). It refers itself to the reign of a certain Vikramasimhadeva and mentions the *Pamchakula* headed by *Maham* Asada. The grant portion is lost.

31. STEP-WELL INSCRIPTION, BAYANA, DISTRICT BHARATPUR.—The Sanskrit portion of this bilingual inscription is dated Vikrama 1553, Saka 1418 (A.D. 1496) and records the construction and completion of the step-well possibly by Sheikh Imada's son *Khurumrum* described as ruling over the kingdom of Vijemandirgarh under Khana Khana.

32. MEMORIAL-PILLARS, POKARAN, DISTRICT JAISALMER.—Two memorial pillars, bearing inscriptions in Nagari characters of the 1lth century and in Sanskrit language, are set up in front of the Balakanthajimatha. One of them, dated Vikrama 1070 (A.D. 1013) records the death, in a battle, of one Ghimghaka, and records the construction of a temple for the Sun-god in his memory, by a certain Dharmapala, probably his son. The other inscription described the valour of Mahipala and records his death in a cattle-raid.

33. MEMORIAL-INSCRIPTIONS, KARVAD, DISTRICT JODHPUR.—A number of memorial slabs, ranging in dates from the 11th to the 15th centuries A.D., are set up in a locality called Dadvad, about half a kilometre from the village proper. They contain inscriptions written in Nagari characters in corrupt Sanskrit. Of these inscriptions : 1) dated Vikrama 1152 (A.D. 1095) records the death of one Jajata, son of Dvajanika; 2) dated Vikrama 1180 (A.D. 1104) records the death of *Guhilaputra* Kaliya, son of Bharatha, and (the performance of *sati* by) his wife Manadevi; 3) dated Vikrama 1180 (A.D. 1124) records the death of *Guhilaputra* Madusa and (the performance of *sati* by) his wife Gachhini; 4) dated Vikrama 1196 (A.D. 1139) records the death of Pamdhura, son *of Guhilaputra* Gauvidraja, and (the performance of *sati* by) his wife Josini; 5) dated Vikrama 1217 (A.D. 1160) records the death of *Guhilaputra* Mahidara, son of Udala, and (the performance of *sati* by) his two wives Mahanadevi and Mamgaladevi; 6) dated Vikrama 1222 (A.D. 1165) records the death of Sidhura, son of Goidasa, and (the performance of *sati* by) his wife Mahanaladevi; 7) dated Vikrama 1240 (A.D. 1183) records the death of Tilotiya, daughter of Mahaghara and 8) dated Vikrama 1373 (A.D. 1316) records the death of Vusura-Padihara and Jagasiha-Padihara and the construction of their *devalis* by Harapali.

34. MEMORIAL-INSCRIPTIONS, OSIAN, DISTRICT JODHPUR.—A number of slabs bearing memorial inscriptions in Nagari characters in corrupt Sanskrit, ranging in dates from the 8th to the 11th centuries A.D., were recently dug out: 1) dated Vikrama 803 (A.D. 746) records the death of Naramanai, son of Bharada of Adityapura; 2) dated Vikrama 885 (A.D. 828) records the death of Gisaditya's son Sarvvata of Dharkatajati; 3) dated Vikrama

1010 (A.D. 953) records the death of Maluka, wife of Vihana of Dharkata-jati; and 4) dated Vikrama 1012 (A.D. 955) records the death of Jaika, the daughter of Viddhaka and wife of Udyotana.

35. PARAMARA INSCRIPTION, KOTA, DISTRICT KOTA.—This Sanskrit inscription in Nagari characters, engraved below a panel of Jaina figures on a red sandstone slab, belongs to the reign of the Paramara king Naravarmadeva and is dated Vikrama 1165 (A.D. 1108). It records that it was caused to be made by *Sauvarnika Sahadeva,* the disciple of Lokanamdi.

TAMIL NADU

36. TWO PILLAR-INSCRIPTIONS, KANCHIPURAM, DISTRICT CHINGLEPUT.—Engraved in Grantha characters of about the 8th-9th century, these inscriptions from the Matangesvara temple contain respectively the *birudas Sri Prabhupatih* and *Sri-Aratyamkan.*

37. PANDYA INSCRIPTIONS, KILIYANAGAR, DISTRICT CHINGLEPUT.—Of the two inscrip tions in Tamil characters, one of about the 13th century, dated in the 19th regnal year of Jatavarman Sundarapandya, records a sale of land by the *mahajanas* of Kiliyanagar Avani-alappirandan-chaturvedimangalam to the god Vedanayakapperumal of the temple Kaliyugarama-vinnagar in the locality. The second inscription, in characters of about the 14th century, engraved on the proper right side of a mounted horseman, cut in high relief on a rock, gives the name of the cavalier as Padungannan and describes him as a member of the king Sundara-pandya's cavalry.

38. VIJAYANAGARA INSCRIPTION, KILIYANAGAR, DISTRICT CHINGLEPUT.—This Tamil epigraph dated in Saka 1352 (A.D. 1429-30) belongs to the reign of the king Devaraya and records the assignment of the contribution of *sadakam* from the shepherds holding lease for lamps, to provide for eight lamps in the temples of Tiruv-Agattisuramudaiyanayanar and Vedanayakapperumal (4 lamps each) by the *mahapradhani* Silupparasar for the welfare of the king.

39. PALLAVA INSCRIPTION, VALLAM, DISTRICT CHINGLEPUT.—This Tamil inscription in Tamil characters of about the 7th century is engraved on the beam of the facade of the lower cave to the right of the Vasantesvara cave-temple. It refers to *Palava-per-araisaru.*

40. JAINA INSCRIPTION, VERALUR, DISTRICT CHINGLEPUT.—This inscription, engraved to the left of a sculptured shrine with the image of Parsvanatha on a small boulder in the Nagamalai, is in Grantha and Tamil characters of about the 9th century. It states that it is the *devaram* caused to be made by Vasudeva-Siddhanta-bhatarar.

41. NOLAMBA INSCRIPTION, BOMPATTI, DISTRICT DHARMAPURI.—This Tamil inscrip tion assignable to the 10th century, on a hero-stone, records the death of a person (name not given) in the course of a cattle-raid conducted by Chamu-Aiyyan, the ruler of Chevattur in the 15th year in the reign of Vira-Nulamban.

42. INSCRIPTION, PADUTTAN-KOTTAI, DISTRICT DHARMAPURI.—This Tamil inscrip tion, in Vatteluttu characters of about the 8th century, is engraved on a stone set up in a cocoanut grove. It is dated in the 26th year in the reign of Sri Prithvigangadi

Kattirai-parumar and records the death, after rescuing cattle, of a servant of Singaperu-maraiyer ruling Kovur-nadu.

43. PALLAVA INSCRIPTION, PULIYANUR, DISTRICT DHARMAPURI.—This hero-stone inscription in Tamil, engraved ;n Vatteluttu characters of about the 6th century is dated in the 19th year in the reign of Singavinnaparuman (Simhavishnu). It records the death of a hero described as the son of Palasiriyar, the ruler of Siruppal in Mel-Vennadu.

44. HOYSALA INSCRIPTION, UTTANGARAI, DISTRICT DHARMAPURI.—This fragmentary inscription, in Tamil language and characters of about the 13th century, records the grant of Urrangarai in the southern portion of Eyil-nadu in Adaiyur-nadu to provide for kitchen *(torumadaippalli)* expenditure in connexion with worship to the deity Tiruvannamalai-udaiya-nayanar on the occasion of the *Visvanathadevan-sandhi* for the well-being of the king (Visvanathadeva).

45. GANGA INSCRIPTIONS, DISTRICT DHARMAPURI.—Two Tamil inscriptions in Vatteluttu characters of about the 9th century, dated in the reign of Sivamaravarman, record the death of heroes. The first from Odduppatti, dated in the 22nd year of his reign, refers to the rule of Mavali-Vanaraya over Ganga-nadu and to the invasion of Tagadur by Indaran. The second from Meyyandappatti, which is broken, refers to the rule of Singaparumaraisar and to a cattle-raid.

46. CHARTER OF DEVARAYA I, MADRAS, DISTRICT MADRAS.—Engraved in Sanskrit language and Nagari characters this copper-plate inscription, now kept in the Government Museum, Madras, belongs to the reign of Devaraya I of the Sangama dynasty of Vijayanagara. Of the details of date, only the name of the cyclic year, *Vikriti* and the word *vyatipata* are legible. It records the grant of the village Nelvayi, situated in Tumdiramandala as an *agrahara,* to Trivedi Vamana, the son of Govindayajvan belonging to the Bharadvaja-gotra by Bhupati, the governor of the Dravida country.

47. INSCRIPTION, KACHCHARAYANPATTI, DISTRICT MADURAI.—This Tamil inscription, in Vatteluttu characters of about the 9th-10th centuries, states that the oil-mill on which it is engraved, was set up in the name of Manekkodivirar of Nelvelur in Ulachchura-nadu by Appan of Milalur in Validi-valanadu.

48. Two CHOLA INSCRIPTIONS, BUDALUR, DISTRICT THANJAVUR.—Of these Tamil inscriptions, in characters of about the 10th century, one dated in the fifth year of Parakesari records a gift of sheep for burning lamps in front of the goddess Bhattaraki of Tiruchchengulam at Budalur in Erinadu. The other inscription, dated in the 15th year of Rajakesari, also records a similar gift.

49. Two TAMIL INSCRIPTIONS, KOVILPATTU, DISTRICT THANJAVUR.—The first inscription, dated in the 12th year (A.D. 1190-91) of Kulottungachola III, seems to record a royal order creating a tax-free *devadana* for food offerings etc., to the god Kulottungachola-Isvaramudaiya-nayanar, at Budalur in Budalur-vattam, set up by Tirunattarnadi *alias* Vijayalaya-muttaraiyan of Valambakudi in Eyil-nadu. One of the pieces of land is stated to be situated in Ettakkiri (Etagiri)-konda-solanallur. Dated in the sixth regnal year of the king Jatavarman Sundarapandya, the other inscription in characters of about the

13th century records the sale of lands as *kudi-ninga devadana* by auction by the authorities of the same temple to some individuals (names given).

50. INSCRIPTION, TIRUCHCHIRAPPALI, DISTRICT TIRUCHCHIRAPPALLI.—A fragmentary inscription in Tamil characters of the 10th century A.D., engraved on a stone-block built into the wall of the central shrine of the Tiruttantonrisvara temple in Uraiyur, records the presentation of *brahmaratham* and other honours for the Vedic scholars who are proficient in the recitation of the Vedas and in the Vedic *mantras, bhashya,* and *sastra* according to the specified rates.

51. CHOLA INSCRIPTIONS, TIRUVASI, DISTRICT TIRUCHCHIRAPPALLI.—Two Tamil inscriptions of Parantaka I, engraved on the door-jambs on either side of the entrance into the *ardha-mandapa* of the Marrurai-Varadisvara temple, dated in the 12th and 15th years of his reign, respectively record endowments of land and gold for the maintenance of a perpetual lamp in the temple of god Tiruvachchiramattu Perumanadigal at Pachchil.

52. PANDYA INSCRIPTION, MELAPPULIYUR, DISTRICT TIRUNELVELI.—Dated Saka 1526 (A.D. 1604-05) and in the 42nd regnal year of the king Jatilavarman Alagan-Perumal Ativiraraman *alias* Srivalla (bha), this inscription records the king's grant of land as tax-free *devadaya* for conducting worship in the temple of the god Chidambaresvara at Puliyur.

53. PANDYA INSCRIPTIONS, TARUVAI, DISTRICT TIRUNELVELI.—An inscription in Tamil, dated in the 11th year (A.D. 1216) of the reign of Maravarman Sundarapandya I, records an order of the state to the officials *(tanattar)* of the temple of the god Valvallapan-disvaramudaiyar at Kupakarayanallur in Tenkarai-nadu specifying the rates of remunera tion to the priests, drummers and women servants of the temple for several services rendered by them in the temple such as preparing paste for anointments, sweeping the *mahamandapa,* etc. Another Tamil inscription, dated in the 25th year (A.D. 1292) of the reign of Mara varman Kulasekhara I, records an undertaking by the *devakanmigal* of the same temple given on behalf of the temple priests to Vettai-Soman *alias* Vanarayapannam of the village in respect of the money of 10 *panam* to provide for food-offerings to the god Vinayaka set up in the temple by him.

UTTAR PRADESH

54. PILLAR INSCRIPTION, KALSI, DISTRICT DEHRADUN.—This one line inscription, in early Nagari characters of about the 10th century and in Sanskrit language, records that a certain thing (not specified) was caused to be made by Sri-Prakasa, a devotee of Sambhu.

55. IMAGE INSCRIPTIONS, HONOL, DISTRICT DEHRADUN.—One of them, in a single line written in late Brahmi characters of about the 7th century and Sanskrit language, states that this (possibly the image) is of *Mahamatya* Sri Kandarpa-singha. The second inscription, in Siddhamatrika characters of about the 7th century and Sanskrit language, states that this (perhaps the image) was made by Vachhu and his son Ralhana.

56. FOUR INSCRIPTIONS, MATHURA, DISTRICT MATHURA.—These inscriptions are deposited in the Archaeological Museum at the place. One of them, written in

mixed dialect and in Brahmi characters of about the 2nd century A.D., records that a water tank, garden, assembly hall, stone tablet and temple, perhaps for the god Mahesvara, were erected by Magaka of Kallatota {*Bulletin of Museums and Archaeology in U.P.,* no. 8, pp. 24 ff.). Another inscription, written in similar characters on the pedestal of a Varaha image, seems to record the installation of the image in question.

A third inscription, in mixed dialect and similar characters and dated in the year 46, probably of the Saka era, is fragmentary and records some grant to the *vihara* of Bodhisattva by a certain person whose name ends in *odasa.*

A fourth inscription, wrtiten in northern characters of about the 6th century A.D. and in Sanskrit language, belongs to the reign of *Bhattaraka Maharajadhiraja* A(ma)ntivar-man and records that an image of Arya Avalokitesvara was caused to be installed by *sresthin* Jivesvara.

ARABIC AND PERSIAN INSCRIPTIONS[1]

BIHAR

1. MISCELLANEOUS INSCRIPTIONS, DISTRICT PATNA.—An inscription from Phulwari Sharif, records the construction, evidently, of the Sangi-Masjid in A.H. 956 (A.D. 1549-50). It provides valuable information for the study of development of architectural style. Another record, now preserved in Patna Museum, though fragmentary, is a beautiful specimen of *Nasta'liq* calligraphy and refers to the construction of a lofty gateway in A.H. 1067 (A.D. 1656-57).

DELHI

2. INSCRIPTION OF THE MAMLUKS, DELHI.—A known record of Ghiyathu'd-Din Balban from Kaman, District Bharatpur, now shifted to the National Museum, Delhi, is found, on re-examination, to record the repairs, carried out in the month of Ramadan 669 (April-May 1271) of a desolate well which was originally constructed one hundred and fifty years ago and lying unrepaired and unattended to by any Muqta and causing great inconvenience to the public. The repairs were carried out through Ibrahim son of Abu Bakr son of Naushirwan Khalj, when Khani—A'zam Mali-i-Muluki'sh-Sharq Musrat Khan was the Muqta' of Bayana.

3. INSCRIPTIONS OF THE MUGHALS, DELHI.—A bilingual record of emperor Humayun, preserved in the National Museum, Delhi, records the construction of a cell and its outlet *(Chah-nal)* at the behest of Amir Shujau-'d-Din Faqir 'Ali Baig Bahadur, by Mehta Datu,

[1] Dr Z. A. Desai, Superintending Epigraphist for Arabic and Persian Inscriptions, of the Survey, Nagpur, assisted by Sarvashri S. A. Kadiri, M. F. Khan and S. S. Husain, have examined and reported two hundred and eighty-six inscriptions during the year. Of these, No. 1 was received from the Superintending Archaeologist, Archaeological Survey of India, Eastern Circle, Calcutta, No. 4 and of Pokaran inscription No. 13, were prepared by Shri N. M. Ghanam of the office of the Superintending Archaeologist, Archaeological Survey of India, Western Circle, Baroda, No. 6 was received from the Superintending Archaeologist, Archaeological Survey of India, Frontier Circle, Srinagar, Nos. 15-18 were received from Shri J. M. Siddiqui of the Centre of Advanced Studies} Department of History, Aligarh Muslim University, Aligarh.

son of Datta Sudha Khatri in A.H. 945 (A.D. 1538). The name of the mason mentioned reads like Dula, son of Rabi. The Nagari varsions designates Faqir 'AH Baig as the administrator of Delhi.

GUJARAT

4. INSCRIPTION OF THE SULTANS OF GUJARAT, DISTRICT BROACH.—A slightly damaged record from Tankaria, District Broach, records the construction of the Jami'mosque of the town of Mustafabad by Sayyid 'Atau'llah Raja Husaini, entitled Sharafu'1-Mulk, at the instance of Qutbu'd-Din Ahmad Shah II.

HARYANA

5. INSCRIPTION OF THE SURS, DISTRICT MAHENDRAGARH.—One of the inscriptions on the Tomb of Sher Shah's grandfather Ibrahim Sur, at Narnaul, published more than once, has been found on re-examination to contain also the names of the composer and calligrapher, Muhammad of Narnaul and Yusuf, son of Maulana Rukn of Narnaul, respectively.

6. MISCELLANEOUS INSCRIPTIONS, DISTRICT MAHENDRAGARH.—A damaged record in *Kufi* characters was found at Narnaul. On palaeographical grounds assignable to twelfth century or so, it is one of the few records of the sub-continent. Another record from the same place, dated A.H. 1082 (A.D. 1672), mentions two artisans, superintendent Salar and Usta(d) Lala, both inhabitants of the town of Narnaul.

JAMMU AND KASHMIR

7. INSCRIPTION OF THE MUGHALS, DISTRICT KATHUA.—A record from Masrur Bhai, dated in the 28th regnal year of emperor Aurangzeb or A.H. 1096 (A.D. 1685), records the excavation of a well by Muhammad Mir, son of Hakim Abu'l-Hasan Gilani. It is inscribed by Subhan Wirdi, son of Khalf.

MADHYA PRADESH

8. MISCELLANEOUS INSCRIPTIONS, DISTRICT SHIVPURI.—An epigraph from Narwar, District Shivpuri, recording the construction of the Urwahi gate of the fort in A.H. 1253 (A.D. 1837-38), mentions Mirza Salim Bakhsh Baig, son of 'Abdu'r-Rahim Baig Khan Bahadur as having been then in charge of the fort.

MAHARASHTRA

9. NIZAM SHAHI INSCRIPTIONS, DISTRICT AHMADNAGAR.—An inadequately published epigraph of Murtada Nizam Shah I, from Ahmadnagar, was found on re-examination to state that parched land was converted into a garden with a water-channel, and the garden was named Na'imiyya, in A.H. 979 (1571-72 A.D.), through the efforts of Khwaja Husain entitled Ni'mat Khan, for the use of general public and their animals. It further prohibits its sale, etc., and vests its trusteeship in his descendants. The calligrapher of this extremely

well-written record is Muhammad Husain. Another known record of the same king from the same place, also recording, in addition to the above, the construction of a mosque, has its date given in a chronogram, which works out to 971, which should thus be in the Shuhur and not Hijra era.

10. MISCELLANEOUS INSCRIPTIONS, DISTRICT AHMADNAGAR.—An undated record from Mandavgan, assignable on palaeographical grounds to the 16th century, contains the name of Malik 'Ambar entitled Mudabbir Khan. An epitaph, from Nagapur, reveals the identity of the deceased, one Mirza Muhammad Taqi Dihdar, as a saint; he had died in A.H. 1069 (A.D. 1658-59). Re-examination of a published epigraph from Jamkhed, shows that the date of construction of a mosque is A.H. 1109 (A.D. 1697-98) and not AH. 1099 (A.D. 1687-88)

RAJASTHAN

11. INSCRIPTIONS OF THE KHALJIS, DISTRICT BHARATPUR.—A published epigraph of Qutbu'd-Din Mubarak Shah Khalji, from Bayana, dated A.H. 718 (A.D. 1318-19), on re-examination, shows that a stepped well with steps on four sides entered through domed doors, and not a reservoir, was constructed on the highway by the orders of Kafur Sultani. Another known but damaged record of the same king, from the same well, has been found to contain one more line on the top containing the titles of the king.

12. INSCRIPTIONS OF AUHADIS OF BAYANA, DISTRICT BHARATPUR.—From re-examina tion of a published record, dated A.H. 823 (A.D. 1420), of Augad Khan, from the same place, the name of the builder of the mosque and a well near it, has been determined to be Malik Nathu Khani instead of Taimur Khan or Muhtaf Khani.

13. INSCRIPTIONS OF THE MUGHALS, DISTRICTS BHARATPUR AND JAISALMER.—A bilingual inscription of Shah Jahan, found at Barambad, records the construction of a well under the superintendence of Ghulam Husain, son of Muhammad Husain Sistani, in A.H. 1058 (A.D. 1648). Another record of Shah Jahan, from the same place, assigns the construction of a mosque to Hasan Baig, an official, in A.H. 1063 (A.D. 1652-53). An epigraph, found at Pokaran, District Jaisalmer, records the construction of a mosque in A.H. 1116 (A.D. 1704-05), by the order of emperor Aurangzeb under the Superintendence of one Dildar.

14. MISCELLANEOUS INSCRIPTIONS, DISTRICT BHARATPUR.—An epitaph found at Bayana records the death of Maliku'-sh-Sharq Qabil in A.H. 851 (A.D. 1447). Another epitaph from the same place, dated A.H. 886 (A.D. 1481), records the demise of Sayyid Mahmud, son of Sayyid Chhajju. One more visitor's record of the celebrated noble, historian and literateur of Akbar's time, Amir Muhmmad Ma'sum, with the poetical name Nami, was found at Barambad: it records, as usual, a Quatrain composed by him and inscribed in A.H. 1007 (A.D. 1598-99), by his son Mir Buzurg. A bilingual record from the same place gives the cost of the construction of a well and laying out of a garden in Fasli 1160 (A.D. 1752) by a revenue official, Changmal, the Qanungu, viz. Rupees six hundred. According to an epitaph from Bayana, the death of Munawwar Khan, son of Pir Khan Manduz'ai, an inhabitant of Shamsabad, occurred in A.H. 1188 (A.D. 1774-75).

Apart from these, a large number of epitaphs without names were found at Bayana, most of them undated; the dated ones bear the dates A.H. 802 (A.D. 1399), A.H. 851 (A.D. 1447), A.H. 879 (A.D. 1475), etc. One of the undated epitaphs, assignable on palaeographic grounds to the 18th century, contains the name of the deceased, as Nadhar Shah Badakhashi.

RAJASTHAN

The Epigraphist of the Department of Archaeology and Museums has prepared an exhaustive bibliography of the published Rajasthani Inscriptions (other than Arabic, Persian & Urdu) from early period to ninth century A.D. She also has discovered and edited an unpublished inscription of the Lakha's period found at Khandara, District Sirohi.

UTTAR PRADESH

15. INSCRIPTION OF THE TUGHLUQS, DISTRICT MORADABAD.—A fragmentary epigraph of Firuz Shah, found at Sirsi, recording the construction of a mosque seems to give (Ghiya)thu'd-Dunya wa'd-Din as the king's title. None of his coins or inscription discovered so far, contains this title.

16. INSCRIPTIONS OF THE MUGHALS, DISTRICTS AGRA AND ALIGARH.—A known record of Humayun, from Pilkhana, District Aligarh, has been found on re-examination to refer to Shaikh Mahmud, son of a celebrated nobleman under Babur and Humayun, as the builder of a well in A.H. 939 (A.D. 1532-33). A metrical epigraphy of Akbar, found at Sikandra Rao, District Aligarh, assigns the construction of a Jami' mosque to one Sabdal Khan, through the efforts of Miyan Salih, in A.H. 993 (A.D. 1585); the poet who composed the epigraphy was Nahvi. A metrical record of Jahangir, from Sambhal, District Moradabad, composed by Shaikhi, states that a mosque during A.H. 1024-1025 (A.D. 1615-17) at the Tomb of Shah Kabir was built by Man (during the time of) Najmu'd-Din, the spiritual successor of Farid. An epigraph of Aurangzeb found at Aligarh records the construction of a mosque by a member of the Butcher Community, Shaha, son of Haji in A.H. 1087 (A.D. 1676). An inadequately published record of Aurangzeb, from Fatehpur Sikri, District Agra, refers to the construction of some edifice, in A.H. 1101 (A.D. 1689-90) by way of offering to the ancestor-saint Shaikh Faridu'd-Din Ganj-i-Shakar, during the tenure of the spiritual successor (of Shaikh Salim Chishti), Shaikh Muhammad Islam, son of Ibrahim Ma'sum and grandson of Shaikh Zain Auliya. An inscription from Sambhal states that Nawwab Aminu'd-Daula constructed a mosque at the tomb of his saintly ancestor, His Holiness 'Azizu'llah, in A.H. 1147 (A.D. 1734-35); its chronogram was composed by Masih and text by Jalil. A record of Ahmad Shah, found on a mosque at Sambhal, assigns its construction to Shaikh Bhikha, who was brought up by the late Diwan Muhammad Sadiq Ansari, in the second regnal year or A.H. 1163 (A.D. 1750).

Of quite a few epitaphs of Armenians and Europeans buried at Agra, these are dated in the time of Shah 'Alam II: one records the death of Jean Duxamel, son of Francois Duxamel *alias* Anjou on the 11th July, A.D. 1775 in the 17th regnal year; another records the demise of Franswa Burjon (Francois Brugeon) on the 24th April, A.D. 1776 in the same regnal year; according to third, Mirza Qadir Rida Khan died in the 23rd regnal year

(A.D. 1782-83). The fourth records the death of Bibi Maria Demlad Sahiba, mother of Captain Hartun Sahib, in the fortieth regnal year (A.D. 1798).

An epigraph from Bahadurpur, District Aligarh, dated in the reign of the same emperor, records the construction of a well by Miyan Muhammad Mu'azzam Khan Bahadur, under the supervision of Mirza Kallu Baig, the Darugha, in the thirty-seventh regnal year (A.D. 1795-96). A record from Fatehpur Sikri records the construction of the house of Kazim 'AH in A.H. 1223 (A.D. 1808-09) or so, in the time of emperor Akbar Shah II.

17. INSCRIPTION OF THE SURS, DISTRICT ALIGARH.—A record of Islam Shah Sur, from Aligarh, assigns the construction of a mosque to Bihram Khan, son of 'Abdu'r-Rahim Sur, in A.H. 957 (A.D. 1550).

18. MISCELLANEOUS INSCRIPTIONS, DISTRICTS AGRA, ALIGARH, MATHURA AND MORADABAD.—An epitaph of the thirteenth century was found at Nagar, Near Fatehpur Sikri; it records the death of Mahmud son of Ahmad in A.H. 666 (A.D. 1268). A fragmentary tablet from the same place, found in the debris of a partially ruined mosque contains the date A.H. 675 (A.D. 1276). The epitaph of the celebrated official of the early Mughal emperor, Shaikh Ghoran, referred to above, was found at Aligarh; it does not contain the date of his death. An epitaph of one Farzand 'Ali son of Sultan Bayazid, who died in A.H. 940 (A.D. 1533-34), was found at Sambhal. Another epitaph, found at Firuzabad, District Agra, furnishes the name of Daulat Khan, son of Khwaja Islam Khan in A.H. 951 (A.D. 1544-45). In a known epitaph, from Nagar, the date of death of Shaikh Najmu'd-Din 'Ali is found to be A.H. 959 (A.D. 1552) instead of A.H. 957 (A.D. 1550). The construction of the tomb of the celebrated saint and scholar Miyan Hatim Sambhali in A.H. 969 (A.D. 1561-62) finds mention in a record from Sambhal. Another epigraph from the same place records the death of Shaikh Panju, another celebrated saint and the construction of" his tomb by his son Mansur, in A.H. 969 (A.D. 1561-62). The saint's actual name which is not given in available published records, is unfortunately illegible due to damaged writing.

The construction of a School or College by the well-known official by Akbar's time, Sayyid Muhammad Gaisu in A.H. 976 (A.D. 1578) was found at Aligarh. An epitaph from Sambhal records the death in A.H. 980 (A.D. 1572-73) of His Holiness Maulana Kamalu'd-Din Uthman, who is mentioned as a vastly learned man. Another saint, Shaikh Da'ud who died in A.H. 991 (A.D. 1583-84) finds mention in a metrical epitaph from Aligarh; it was composed by Nahvi and Ahmari. One more epitaph, inscribed in A.H. 996 by Husain son of Ahmad Chishti, a Sufi disciple of Shaikh Salim Chishti and a calligrapher of high order (who also penned the inscription on the Baland-Darwaza at Fatehpur Sikri) was found at Fatehpur Sikri; an epitaph penned by him was earlier reported *(A. R. Indian Epigraphy 1965-66,* no. D, 491). An epitaph from Aligarh records the death of Mir 'Abdu'llah Akmal (lit. most perfect), of Delhi, described as an extremely erudite scholar, who died in A.H. 1135 (A.D. 1722-23). A metrical record from Sadabad, District Mathura, refers indirectly to the martyrdom of 'Askar' Ali Khan, who passed away in A.H. 1150 (A.D. 1737-38). At Fatehpur Sikri was found an epitaph of one Sharif Baig, originally of Jajurm in Iran, who died in A.H. 1190 (A.D. 1776). The information on the repairs undertaken in A.H. 1188 (A.D. 1774-75) to the tomb of the celebrated Shiite scholar and saint, Sayyid Nuru' llah Shustari who was killed in A.H. 1019 (1610 A.D.), is furnished by an epigraph from Agra. Another epigraph discovered from Fatehpur Sikri assigns the construction of a mosque in A.H. 1192 (A.D. 1779) to 'Iwad Baig, son of Muhammad

Baig, a native of Meshhed in Iran. Two epigraphs, one each composed by Rida and Rami, from Agra, record the death of Nawab Khadija Sultan Begam, who died in A.H. 1222 (A.D. 1807-08). A late record from Fatehpur Sikri, dated A.H. 1296 (A.D. 1879), record the death of Jhajju Khan Qawwal, and has nothing to do with the celebrated musician Baiju Bawra.

WEST BENGAL

19. INSCRIPTION OF THE SULTANS OF BENGAL, DISTRICT BIRBHUM.—A fragmentary but interesting epigraph, dated A.H. 618 (A.D. 1221), records the endowment of a Hospice by (name lost), son of Muhammad al-Maraghi, for the benefit of saints and Sufis, in the time of the 'chief among the kings and Sultans, one favoured with the custody of the time', 'Ali Sher son of 'Iwad (son of) Burhan.

HI. NUMISMATICS AND TREASURE TROVE[1]

ANDHRA PRADESH

1. VIJAYANAGARA COINS, DISTRICT CHITTOOR.—Eleven gold coins of Vijayanagara rulers were acquired by the Collector of the district under the Treasure Trove Act.

2. SATAVAHANA COINS, DISTRICT GUNTUR.—Four thousand three hundred and eighty-three lead coins belonging to Satavahana rulers were acquired as treasure trove.

3. VIJAYANAGARA AND MUGHAL COINS, DISTRICT KARIMNAGAR.— Ninety-nine Vijayanagara gold coins (including five pagodas and one half pagoda) and two hundred and twenty Mughal issues were obtained as treasure trove.

4. SILVER COINS, DISTRICT KARIMNAGAR.—Ninety-six (machine made) Asaf Jahi coins were acquired as treasure trove.

5. MUGHAL COINS AND BROKEN VESSEL, DISTRICT KARIMNAGAR.—Ninety-one Mughal coins of silver with one broken vessel of brass were found.

6. EAR-ORNAMENT, DISTRICT MAHBUBNAGAR.—One ear ornament of gold, decked with figure of Gaja-Lakshmi, (broken into two pieces) was found.

7. WESTERN CHALUKYAN COINS, MAKTHAL, DISTRICT MAHBUBNAGAR.—Two hundred and ninety-one issues of western Chalukyan rulers in base gold were collected as treasure trove.

8. ASAF JAHI COINS, DISTRICT MAHBUBNAGAR.—One hundred machine made silver coins of Asaf Jahi dynasty and one earthen pot were acquired as treasure trove.

9. ASAF JAHI AND MUGHAL COINS, DISTRICT MEDAK.—Sixteen silver issues and one machine made copper coin of Asaf Jahi dynasty and eleven gold coins of the Mughals were acquired as treasure trove.

10. WESTERN CHALUKYAN COINS, HUZURNAGAR, DISTRICT NALGONDA.—Six silver coins of Western Chalukyans were obtained by local Tahsildar as treasure trove.

11. GOLD COINS, HUZURNAGAR, DISTRICT NALGONDA.—Three gold coins, one each belonging to Khalji, Tughlaq and Bahmani rulers were acquired as treasure trove.

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[1] Information from:—24-26, Central Circle, and 23, 51, North-western Circle of the Survey; 1-14, the Director of Archaeology & Museums, Andhra Pradesh; 15-22, the Director of Archaeology, Gujarat; 27-47, Director of Archives and Archaeology, Maharashtra; 48-49, Asst. Director, Cultural Affairs, Orissa; 50, the Director, Archaeology & Museums, Punjab; and 52, Director, State Museum, Lucknow, U.P.

12. ASAF JAHI COINS, HUZURNAGAR, DISTRICT NALGONDA.—Forty Asaf Jahi coins of silver within a bronze container were discovered.

13. MUGHAL COINS, DISTRICT NIZAMABAD.—Ten silver Mughal coins were found.

14. MISCELLANEOUS COINS AND OTHER OBJECTS, DISTRICT WARANGAL.—Ten Mughal issues, one *teega* (wire) in silver, two gold earrings, and fifty-one machine made Asaf Jahi coins in silver, one gold coin of British India were acquired by Collector, Warangal and Tehsildar Parkal, respectively.

GUJARAT

15. LATE MUGHAL COINS, TALUK DASKROI, DISTRICT AHMADABAD.—Seventeen silver coins, in a bronze vessel were discovered in a school premises at Kasendra.

16. COPPER COINS, DISTRICT AHMADABAD.—A hoard of three hundred and seventy old copper coins was found near the local Town Hall at Dholka.

17. EARLY COINS, TALUK MAHUVA, DISTRICT BHAVANAGAR—A hoard of one thousand eight hundred and eight coins resembling Portuguese coinage was found at Gadhada.

18. SILVER COINS, DISTRICT BROACH.—Fifty-seven and thirty-one old silver coins were collected from nearby village Ankleshwar and Jagadia respectively.

19. SILVER COINS AND SILVER ORNAMENTS, TALUK JAMBUGHODA, DISTRICT PANCH MAHALS.—Five old silver coins and silver ornaments were discovered as treasure trove at Jambughoda.

20. MUGHAL COINS, TALUK LIMDI, DISTRICT RAJKOT.—A hoard of one hundred sixty-five Mughal coins, in the form of a treasure trove was found at Limdi.

21. SILVER COINS, TALUK RAJOT, DISTRICT RAJKOT.—Thirty-nine old silver coins in the form of a hoard were found as treasure trove at Thebachda.

22. SILVER COINS, TALUK KAMREJ, DISTRICT SURAT.—A hoard of eighty-eight old silver coins from Kathor were acquired as treasure trove.

HIMACHAL PRADESH

23. MISCELLANEOUS COINS, KANGRA FORT, DISTRICT KANGRA.—Twenty-seven copper coins were discovered below the image of Lord Adinatha while shifting it to a newly renovated room. The collection includes one quarter anna of East India company dated 1853 and a few issues of Victoria dated between 1858-1897. The remaining finds included a medieval coin and some issues of a local dynasty.

MADHYA PRADESH

24. MUGHAL COINS, HATTA, DISTRICT DAMOH.—Twelve silver coins consisting of the issues of Shah Jahan, Aurangzeb, Shah Alam, Muhammad Shah and Bahadur Shah were discovered at Hatta.

25. MUGHAL COINS, ASHTA, DISTRICT SEHORE.—Thirty-nine silver and silver-coated copper coins of Mughal kings were discovered at Ashta.

26. ROMAN GOLD COINS, MARDAKHERI, DISTRICT SEHORE.—An inscribed Roman gold coin (pi. XLI F) showing the bust of a bearded king on the obverse and a standing winged goddess on the reverse was discovered at Mardakheri (weight 7 gramms, diameter 20 mm).

MAHARASHTRA

27. BRITISH COINS, TALUK AHMADNAGAR, DISTRICT AHMADNAGAR.—Seven silver rupees, two silver two-anna, one nickel two anna and one copper quarter anna belonging to Queen Victoria, Edward VII and George V, were discovered as treasure trove at Jeur.

28. MARATHA COINS, TALUK NAGAR, DISTRICT AHMADNAGAR.—A hoard of two hundred and four copper coins issued by Sivaji (Sivaraj) was found at Ahmadnagar.

29. VIJAYANAGARA COINS, TALUK NEVASA, DISTRICT AHMADNAGAR.—Thirteen gold coins issued by Sri Pratapa Harihara II of Vijayanagara were discovered at village Gondegaon as treasure trove.

30. BRITISH COINS, TALUK AKOT, DISTRICT AKOLA.—Seventeen silver rupee-coins of George V were recovered as treasure trove from Dautpur.

31. BRITISH COINS, TALUK AKOT, DISTRICT AKOLA.—At Hingni ninty-two silver rupee coins of Victoria and Edward VII were found as treasure trove.

32. GOLD BEADS AND SILVER ORNAMENTS, TALUK AKOT, DISTRICT AKOLA.—Thirty-one gold beads and seven silver ornaments were discovered as treasure trove at Manabda.

33. MUGHAL COINS, TALUK GONDIA, DISTRICT BULDHANA.—Ninty-nine silver coins of Akbar, Jahangir, Shah Jahan and Aurangzeb were found at Gorgaon as treasure trove.

34. BRITISH COINS, TALUK JALGAON, DISTRICT BULDHANA.—Nineteen silver rupee-coins of Victoria, Edward VII and George V were collected from Sonala.

35. WESTERN KSHATRAPA COINS, TALUK MALKAPUR, DISTRICT BULDHANA.—Thirty-six silver coins of Western Kshatrapas were found as treasure trove at Dahigaon.

36. KSHATRAPA COINS, MALKAPUR, DISTRICT BULDHANA.—A hoard containing thirty-five Kshatrapa coins in silver was received in the Central Museum, Nagpur from Sub-Divisional office, Malkapur.

37. MUGHAL COINS, TALUK MEHKAR, DISTRICT BULDHANA.—Eleven silver coins belonging to Shah Jahan, Aurangzeb and Mohammad Shah were discovered at Hiwara Gadling.

38. GOND (?) COINS, TALUK GODCHIROLI, DISTRICT CHANDRAPUR.—Six gold coins belonging to Somanga Deva and gold ornaments were found as treasure trove at Wardha.

39. MUGHAL COINS, TALUK RAJURA, DISTRICT CHANDRAPUR.—Fifteen silver coins of Jahangir, Shah Jahan, Aurangzeb, Shah 'Alam I, Kam Baksh and one silver talisman were found at Temburwai.

40. COINS AND SOVEREIGNS, TALUK BHUSAWAL, DISTRICT JALGAON.—One hundred twenty-one silver rupee coins and ten gold sovereigns of Victoria, George V and Edward VII were acquired as treasure trove from villages Talwel and Muktal.

41. TUGHLUQ AND BAHMANI COINS, TALUK PARANDA, DISTRICT OSMANABAD.—One gold muhr, three silver coins of Muhammad (III) Bin Tughlaq and Ahmad Shah II (Bahmani) along with four cobra figures of gold were acquired as treasure trove from Eda.

42. EARLY COINS, TALUK WALVA, DISTRICT SANGLI.—Six hundred and eighty-four lead coins were found from village Wategaon in a hoard.

43. LEAD COINS, TALUK WALVA, DISTRICT SANGLI.—At Nerla two lead coins issued by Gautamiputra Vilavayakura (Kura family of Kolhapur) were discovered as treasure trove.

44. MARATHA COINS AND OLD SWORDS, TALUK KHATAV, DISTRICT SATARA.—Two silver coins of Ali Jauhar and four rusted swords were found at Veduj as treasure trove.

45. MISCELLANEOUS COINS, TALUK THANA, DISTRICT THANA.—Forty-five gold pieces, seventeen gold coins and 3*260 kg silver coins belonging to Arab Governors and Gadhaiya (Indo-Sassanian type rulers) were discovered at Thana as treasure trove.

46. COPPER COINS, TALUK WARDHA, DISTRICT WARDHA.—One hundred and sixty copper coins of Mughal fulus were found at Ekruli.

47. BAHAMANI AND VIJAYANAGARA COINS, TALUK DARWHA, DISTRICT YEOTMAL.—Six muhrs and one pagoda coin in gold of Bahamani ruler, Muhammad Shah-bin-Humayun-shah and Vijayanagara ruler were found at Jowala as treasure trove.

ORISSA

48. MISCELLANEOUS COINS, UDALA, DISTRICT MAYASURBHANJA.—A hoard of nine coins, comprising issues of Mehendra-viravikram-Sahadeva and of Srimat Maharaja Sivji Rao Holdar Bahadur were found as treasure trove.

49. MODERN COPPER COIN, BHUBANESWAR, DISTRICT PURI.—Eighty-six modern copper coins were acquired from one Sri Pravakar Tripathy, a local resident.

PUNJAB

50. KUSHAN AND MEDIEVAL COINS, SANKHOL, DISTRICT LUDHIANA.—A large number of copper coins belonging to Kushan and medieval periods were discovered either from surface or from the excavations at Sankhol. Some more coins of Kushan rulers and Samanta-deva were found respectively at Sunet, and Bhari in District Ludhiana. Some coins of Muslim kings were picked up from Chak Gujaran in District Hoshiarpur.

RAJASTHAN

51. ANCIENT COINS, RAIRH, DISTRICT TONK.—One hundred and ten copper coins were collected from the surface of ancient mound at Rairh. The collection consisted of square as well as round cast coins, including one bearing a Brahmi legend. Some of the coins had on them Ujjain symbol with its varients, *Jayadhvaja* and tree-in-railing.

UTTAR PRADESH

52. KUSHAN COINS AND ORNAMENTS, DISTRICT TEHRI GARHWAL.—A hoard containing forty-five Kushan gold coins were discovered as treasure trove at Sivananda Ashram Muniki-Reti. It consisted of the coins of Huvishka (pl. XLI A) with his profile bust on the obverse and deity on reverse, and those of Vasudeva (pl. XLI B), Siva and Bull type. The ornaments (pl. XLI G, D & E) included two ear-tops, one chain, one twisted wire and two earrings.

IV. OTHER IMPORTANT DISCOVERIES

GUJARAT

1. METAL IMAGES, BHANVAD, DISTRICT JAMNAGAR.—The Director of Archaeology, Gujarat State, discovered, during road constructions, a metal image of Ganesa and devotee.

2. SCULPTURES, BHOBHA FALIA, BORSAD, DISTRICT KHEDA.—The Director of Archaeology, Gujarat State, discovered, while digging for pipe laying, thirty-two sculptures of white marble and yellow sandstone. Among these, images in *kayotsarga, tribhanga* or of *chamaradhari,* and *parikar* are noteworthy.

3. SCULPTURES AND FRIEZE, RANI-KI-VAV AT PATAN, DISTRICT MAHESANA.—Clearance work here by the Archaeological Survey, as a part of conservation, revealed sculptures of *surasundaris* and a long frieze of miniature deities.

4. KSHATRAPA REMAINS, MAHIKA, DISTRICT RAJKOT.—The Director of Archaeology, Gujarat State, discovered structural remains of the Kshatrapa period.

5. MEDIEVAL AND LATE MEDIEVAL MARBLE STATUES, ODA, DISTRICT SABAR KANTHA.—The Director of Archaeology, Gujarat State, in the course of digging for foundation of a house discovered images of Thirthankaras, Chaumukhiji, Chaubisi panel, Ambika, a donor, Jain *munis,* etc. Particular mention may be made of inscribed images of Acharya Harivijaya Suri (VS 1182), Acharya Hemachandra Suri (VS 1198), doner (VS 1192) and that of Ambika (VS 1337).

6. INSCRIBED JAINA IMAGE, HALVAD, DISTRICT SURENDRANAGAR.—The Director of Archaeology, Gujarat State, discovered an inscribed marble Jaina image of VS 1652.

MADHYA PRADESH

7. MEDIEVAL TEMPLE AND SCULPTURES, SATPON, DISTRICT BHOPAL.—Shri A. P. Sagar of the Central Circle of the Survey noticed a number of sculptures of the Brahmanical and Jaina pantheons, besides remains of a temple. He also noticed a *sati* pillar of Samvat 1336.

8. MEDIEVAL SCULPTURE, DHAR.—Shri Raghbir Singh of the Central Circle of the Survey noticed an inscribed image of four-armed Parvati standing in *samabhanga* (Pl. XLII A).

9. MEDIEVAL SCULPTURES, INDOR, DISTRICT GUNA.—Sarvashri B. L. Nagarch and Narayan Vyas of the Central Circle of the Survey noticed a number of sculptures at Indor of which a ten-armed Ganesa, a large bearded head of Siva with elongated *jata-mukuta* and a Naga-mithuna in zoomorphic form are noteworthy.

10. EARLY AND MIDDLE STONE AGE TOOLS, KADWAHA, DISTRICT GUNA.—Sarvashri C. B. Trivedi, B. L. Nagarch and Narayan Vyas of the Central Circle of the Survey discovered Early and Middle Stone Age tools made on quartzite (pl. XLIII).

11. MEDIEVAL SCULPTURES, KADWAHA, DISTRICT GUNA.—A number of medieval sculptures, mostly of the Brahmanical pantheon, viz. Brahma, standing and seated Varahas, four-armed dancing Ganesa, etc., were collected from the village by Sarvashri B. L. Nagarch and Narayan Vyas of the Central Circle of the Survey.

12. BRAHMANICAL SCULPTURES, TUMAIN, DISTRICT GUNA.—Prof. K. D. Bajpai of the Sagar University found the following sculptures: (i) Matrikas of the Gupta period, holding garlands and other objects and whose attendants are in human form; (ii) a rare *sarvato-bhadra* figure showing standing Brahma, Vishnu, Siva and a goddess in *abhaya-mudra* of *c.* A.D. 700; (iii) an image of Visvarupa Vishnu assignable to 9th century; (iv) a hooded naga of Late Gupta period holding a cup; (v) Kaumari datable to 9th century; and (vi) a Nataraja of c. A.D. 700 in *tribhanga* pose with his *vahana* below.

13. MEDIEVAL SCULPTURES, HOSHANGABAD.—Shri A. P. Sagar of the Central Circle of the Survey noticed a number of medieval sculptures, viz. *panchamukha* Hanuman, Uma-Mahesvara, Chamunda and Bhairava at Hoshangabad.

14. EARLY SCULPTURES, GULGAON, DISTRICT RAISEN.— Sarvashri C. B. Trivedi and A. P. Sagar of the Central Circle of the Survey noticed a Naga and Nagi in human form of *c.* 2nd century A.D. (pl. XLIV A), Parsvanatha assignable to *c.* 3rd century A.D. (pl. XLIV B) and a torso of the Buddha in mottled Mathura red sandstone.

15. EARLY AND MIDDLE STONE AGE TOOLS, TERAHI, DISTRICT SHIVAPURI.—Shri C. B. Trivedi of the Central Circle of the Survey discovered a large number of Early and Middle Stone Age tools made on quartzite around the Mohajamata Temple in the valley of Mauar rivulet.

16. SCULPTURES, MAHAR REGIMENT CAMPUS, SAGAR.—Prof. K. D. Bajpai identified a Surya image wearing long boots and seated on a chariot drawn by seven horses; Sandhya is standing between his legs. He also found an image of Vayu in *tribhanga* along with his *vahana*. Both are datable to *c.* 10th century A.D.

MAHARASHTRA

17. SCULPTURE, NAGPUR.—Shri Raghbir Singh of the Central Circle of the Survey brought to light a sculpture of four-armed Jambhala datable to *c.* 5th century A.D. (pl. XLII B).

18. SILAHARA TEMPLE, PALASDEV, DISTRICT PUNE.—Shri P. Narayan Babu of the South-western Circle of the Survey located a Silahara temple of the 12th century resembling the Ambarnath temple, Ambarnath. Ramayana scenes are sculptured in the *janga* portion of the temple.

19. HEMADPANTHI TEMPLES, POKHARI, DISTRICT YEOTMAL.—Shri B. L. Nagarch of the Central Circle of the Survey noticed two temples *die.* 12th century A.D., one of which, the Jagadamba *deul,* is dedicated to Durga.

MYSORE

20. MIDDLE STONE AGE SITES, DISTRICT BELGAUM.—Shri B. Narasimhaiah of the South-western Circle of the Survey located four Middle Stone Age sites yielding tanged arrowheads, scrapers, blades, flakes and miniature handaxes fashioned out of quartzite and sandstone at Vatnal, Katral, Mallur and Korvikop.

21. BRONZE KALI, MALANGI, DISTRICT MYSORE.—Dr M. S. Nagaraja Rao, Director of Archaeology, Mysore State, discovered a gold gilded bronze image of Kali ascribable to *c.* 1000 A.D (pl. XLV).

22. TEMPLE AND SCULPTURES, DISTRICT RAICHUR.—Dr A. Sundara of the Kannada Research Institute, Karnataka University, Dharwar, found many temples and sculptural remains mostly of the Vijayanagara period. Important are a five-faced Hanuman and his consort with hooded serpent canopy, perhaps belonging to the Bharati Ramana Mukhya Prana of Madhva sect from Bennur, Surya accompanied with Danda and Pingala from Mukkunda, and a damaged image of Vishnu with Lakshmi sculptured on his left chest from Kanakagiri.

23. NEOLITHIC AND MEGALITHIC SITES, ARAHALLI, DISTRICT RAICHUR.—Dr A. Sundara of the Kannada Research Institute, Karnataka University, Dharwar, discovered two neolithic and one megalithic burial-cum-habitation sites at Arahalli. The burial monuments are cairn-circles.

24. VISHNU IMAGE, BIKKANAHALLI, DISTRICT RAICHUR.—Dr B. K. Gururaja Rao of the Karnataka University found an image of Vishnu of the Kalyani Chalukya period.

25. COPPER PLATES, KARATGI, DISTRICT RAICHUR.—Dr B. S. Kulkarni of the Kannada Research Institute and Dr S. H. Ritti of the Karnataka University, Dharwar, obtained a set of three copper plates with seal of the Kalyani Chalukyas.

RAJASTHAN

26. JAIN SCULPTURES, BAGHERA, DISTRICT AJMER.—The Director of Archaeology and Museums, Rajasthan, discovered twenty-four inscribed Jaina images of 12th/13th century A.D.

27. SCULPTURES, KORIYA, DISTRICT AJMER.—The Director of Archaeology and Museums, Rajasthan, found two sculptures, besides one of Chakresvari datable to 10th century A.D. in the village.

28. BRAHMANICAL SCULPTURES, GHAT, KHOOTENTA AND UMARAIN, DISTRICT ALWAR.—The Director of Archaeology and Museums, Rajasthan, discovered images of Ganesa

datable to 10th century A.D. and Vishnu of 11th/12th century from Ghat, Varaha from Khootenta and Surya and Mahishamardini from Umarian.

29. WALL PAINTINGS, SAKAT, TALVRIKSHA AND CHHAJURAMPURA, DISTRICT ALWAR.—The Director of Archaeology and Museums, Rajasthan, discovered wall paintings pertain ing to 18th/19th century at the above places.

30. JAINA' METAL IMAGES, SAMOLI, DISTRICT ALWAR.—The Director of Archaeology and Museums, Rajasthan, found nine metal images of the Jaina pantheon assignable to 10th century A.D.

31. HARAPPAN, LATE HARAPPAN AND EARLY HISTORIC POTTERY, BHADRA, DISTRICT GANGANAGAR.—Shri Devendra Handa of the B.T.T. College, Sardarshar, discovered an extensive mound yielding Harappan, Late Harappan and early historic red ware pottery at Bhadra.

32. GADHAIYA DUMPY SILVER PIECES, BUCHAWAS, DISTRICT GANGANAGAR.—Shri Devendra Handa discovered seventeen Gadhaiya dumpy silver pieces.

33. COPPER BILLON COINS of ALLAUDIN KHALJI, GADDANA, DISTRICT GANGANAGAR.—Of the four hundred copper and billon coins obtained from a low mound here by a cultivator Shri Handa recovered five pieces.

34. COIN of FIROZSHAH TUGHLAQ, HARIASAR, DISTRICT GANGANAGAR.—Shri Devendra Handa discovered a copper coin of Firozshah Tughlaq.

35. MEDIEVAL POTTERY AND COPPER COINS, JABRASAR, DISTRICT GANGANAGAR.—Shri Devendra Handa of the B.T.T. College, Sardarshar, found copper coins of Samantadeva from a mound yielding medieval pottery.

36. PRE-HARAPPAN, HARAPPAN AND EARLY HISTORIC AND MEDIEVAL POTTERY AND COINS, KAROTI, DISTRICT GANGANAGAR.—Shri Devendra Ganda of the B.T.T. College, Sardarshar, located on the bed of the Ghaggar an extensive mound spreading over 200 bighas and yielding pre-Harappan, Harappan, early historic and medieval pottery. He also obtained terracotta animal figures representing bulls, boars, camels, elephants, dogs (horses?), terracotta gamesmen of various types, terracotta circular cakes with finger tip impression in the centre, etc.

Among the coins recovered were two copper coins of Vasudeva of the Kushan dynasty; a silver and two copper Indo-Sassanian coins and copper coins of Samantadeva, Somaladevi, Altamash, Nasiruddin Mahmud and Firozshah Tughlaq.

37. PLAIN RED WARE AND COIN OF GONDOPHERNES, MANDARPURA, DISTRICT GANGA NAGAR.—Shri Devendra Handa found a round copper coin of Gondophernes from a mound yielding historical plain red ware.

38. PRE-HARAPPAN, HARAPPAN, EARLY HISTORIC AND MEDIEVAL POTTERY AND COINS, NOHAR AND JOGI-ASON CHAK NO. 1, DISTRICT GANGANAGAR.—Shri Devendra Handa discovered among several mounds here pottery assignable to the pre-Harappan,

Harappan, early historical and medieval periods. At the former site copper coins of Appolodotus, Vasudeva of the Kushan dynasty, Firozshah Tughlaq, Bahlol Lodi and Akbar were also found. Besides, silver dumpy Gadhiya coins were also picked up.

39. HISTORIC POTTERY AND COPPER COINS, PANDUSAR, DISTRICT GANGANAGAR.—Shri Devendra Handa discovered copper coins of Suryamitra and Gondophares from a mound yielding historic pottery.

40. MEDIEVAL POTTERY, COPPER COIN AND SEAL, PHEPHANA, DISTRICT GANGANAGAR.—Shri Devendra Handa found a mound yielding medieval pottery. He also found here two copper coins of Akbar and copper seal of Rama Simha.

41. MEDIEVAL POTTERY AND COINS OF SAMANTADEVA, THIRANA, DISTRICT GANGA NAGAR.—Shri Devendra Handa discovered at Thirana a mound yielding medieval pottery and six billon coins of Samantadeva.

42. SCULPTURE, ARANIA, DISTRICT JHALAWAR.—The Director of Archaeology and Museums, Rajasthan, discovered a six-armed image datable to 10th century.

43. STONE SCULPTURES, OSIAN, DISTRICT JODHPUR.—The Director of Archaeology and Museums, Rajasthan, found forty-four stone sculptures.

44. MEDIEVAL SCULPTURE, JHULANI, DISTRICT KOTA.—The Director of Archaeology and Museums, Rajasthan, found an image of Lakshmi assignable to the medieval period.

TAMIL NADU

45. NEOLITHIC SITE AT SEMMALI TANK NEAR TARKADU-PERIYATANDA, DISTRICT SALEM.—Shri K. R. Srinivasan, Retired Director of the Survey picked up a pointed butt-end neolithic celt made on Salem hornblendic gneiss and a typical neolithic handmade lipped bowl of burnished grey ware and painted with ochreous band. The extensiveness of the site was confirmed by Shri K. V. Soundara Rajan of the Southern Circle of the Survey.

UTTAR PRADESH

46. EARLY NAGARI IMAGE INSCRIPTIONS, HANOL, DISTRICT DEHRADUN.—Shri R, K. Pant of North-western Circle of the Survey during the course of documentation of sculptures brought to light two inscriptions, one on a Siva image and the other on the pedestal of a sculpture from the *garbha-griha* of Mahasu Temple, Hanoi. The inscriptions are in early Devanagari characters datable to *c.* A.D. 1400 on palaeographic grounds.

47. LATE BRAHMI INSCRIPTIONS, KALSI, DISTRICT DEHRADUN.—Shri R. P. Sharma of the North-western Circle of the Survey during the course of documentation of the sculp tures brought to light an inscription engraved on the back of a sculptured slab from Kalsi. The inscription is datable to *circa* A.D. 900.

48. INDO-SASSANIAN COINS, SARNATH, DISTRICT VARANASI.—Shri Krishna Kumar of the Survey obtained nine silver coins of Adi Varaha and Sri Vigraha types.

V. RADIOCARBON DATES[1]

The radiocarbon dates[2] presented here were measured between August 72-August 73 at the Tata Institute of Fundamental Research[3], Bombay. The Sites[4] have been arranged statewise. The dates given below were calculated on the basis of 5730 years half-life value. The dates in brackets have been obtained by using 1950 as the reference year.

ANDHRA PRADESH

1. PEDDABANKUR, DISTRICT KARIMNAGAR

(i) TF-1274, Early historical — 1985 ± 95 (35 B.C.)
Wood charcoal; Sector I, division 75, layer 2, depth 3-68 m.

(ii) TF-1276, Early historical — 1960 ± 105 (10 B.C.)
Wood charcoal; Sector I, division 74, Trench El, layer 2, depth 4-6 m.

GUJARAT

2. KUMBARIA, DISTRICT BANAS KANTHA

(i) TF-1221, Ancient mines — 535 ± 90 (A.D. 1415)
Charcoal; surface; Field no. AC-3.

(ii) TF-1222, Ancient mines — 905 ± 85 (A.D. 1045)
Charcoal; surface; Field no. AC-4.

3. PRABHAS PATAN, DISTRICT JUNAGARH

(i) TF-1284, Chalcolithic — 3565 ± 100 (1615 B.C.)
Charcoal; Locus D-6-7, layer 12, depth 4-1 cm; Field no. 287. River might have been close to the present site.

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[1] Contributed by D. P. Agarwal and Sheela Kushumgar.

[2] For further details of dated samples, submitting organizations may be contacted.

[3] The radiocarbon dating Laboratory has since been shifted to the Phycical Research Laboratory, Navrangpura, Ahmadabad-380009.

[4] Samples submitted 1, by the Director of Archaeology and Museums, Government of Andhra Pradesh, Hyderabad; 2, by the Director, Geological Survey of India, Gujarat circle, Ahmedabad; 3, 6 to 1Q, by the Deccan College Post-graduate and Research Institute, Pune; 4 and 12, by the Archaeological Survey of India, New Delhi; 5, by the National Institute of Oceanography, Goa; 11 by the University of Madras, Madras; and 13 and 14 by the Allahabad University, Allahabad.

(ii) TF-1286, Chalcolithic Charcoal; 6 D-6-7, layer 13, depth 4-32 m., Field No. 371.	3705 db 95 (1615 B.G.)
(iii) TF-1287, Chalcolithic Shell; Locus B-5, layer 15, depth 5-6 m, Field No. 372. Shell material could have been contaminated by the surrounding miliolite-derived sediments.	4405 ± 110 (2455 B.G.)

4. SURKOTADA, DISTRICT KUTCH

(i) TF-1294, Harappan Charcoal; Locus-X C1, Qd.3, layer 3, depth 2-40-2-90 m, Field no. 1.	3730 ± 100 (1780 B.G.)
(ii) TF-1295, Harappan Charcoal; Locus G I, Qd.3, layer 8, depth 1-90-2-05 m, Field no. 2.	3890 ± 100 (1940 B.C.)
(iii) TF-1297, Harappan Charcoal; Locus C 1, Qd. 4, Pit 1 sealed by layer 3, depth 2-1 m, Field no. 4.	3740 ± 95 (1790 B.G.)
(iv) TF-1301, Harappan Charcoal; Locus Bl, Qd. 3, layer 17, depth 5-65 m, Field no. 8.	3950 ± 135 (2000 B.C.)
(v) TF-1304 and 1309, Harappan Charcoal; Locus ZAI, Qd. 2, layer 18A, and 20; depth 6-65-7-15 m, Field nos. 11 and 16.	3755 ± 90 (1805 B.C.)
(vi) TF-1305, Harappan Charcoal; Locus ZAI, Qd. 2, layer 19, depth 7-25 m, Field no. 12.	4005 ± 100 (2055 B.C.)
(vii) TF-1307, Harappan Charcoal; Locus XAI, Qd. *1,* layer 5, depth 1-60 m, Field no. 14.	3610 ± 100 (1660 B.C.)
(viii) TF-1310, Harappan Charcoal; Locus ZAI, Qd. 2, Layer 11, depth 4-6 m, Field no. 17.	3920 ± 100 (1970 B.C.)
(ix) TF-1311, Harappan Charcoal; Locus ZAI, Qd. 2, layer 4, depth 2-4 m, Field no. 18.	3730 ± 90 (1780 B.C.)

MAHARASHTRA

5. BOMBAY, DISTRICT BOMBAY SUBURBAN

(i)	TF-968, Quaternary Deposit Colite limestone from the continental shelf off Bombay; depth 96 m.	9200 ± 135 (7250 B.C.)
(ii)	TF-971, Quaternary Deposit Coral from continental shelf off Bombay; depth 150 m.	11550 ± 135 (9600 B.C.)

6. INAMGAON, DISTRICT PUNE

(i)	TF-1235, Chalcolithic (?) Wood charcoal; Locus INM-I, C 6', layer 3, depth 0-75 m, Field no. INM-I.828C6 (3).	3225 ± 95 (1275 B.C.)
(ii)	TF-1330, Chalcolithic (?) Wood; Locus E 7', Field no. 865.	3175 ± 105 (1225 B.C.)

7. DEVGAD, DISTRICT RATNAGIRI

	TF-1371, Holocene Water level, Field No. Loc 28/1972.	2000 ± 100 (50 B.C.)

8. MALVAN, DISTRICT RATNAGIRI

(i)	TF-1372, Holocene Shells from 1-40 m, above High water level, Field no. Loc 23/1972.	1110 ± 105 (A.D. 840)
(ii)	TF-1374, Holocene Shells; depth 3 m, Field no. Loc 24/1972. Comment: surface 1*5 m above High water level.	2245 ± 150 (295 B.C.)

9. GUHAGAR (DAMLEWADI), DISTRICT RATNAGIRI

(i)	TF-1365, Holocene Shells; depth 1-10 m, Field no. Loc 30/1972. Comment: Surface 3 m above High water level.	2785 ± 105 (835 B.C.)
(ii)	TF-1366, Holocene Shells; depth 2-20 m, Field no. Loc 30/1972. Comment: surface 3 m above High water level.	2220 ± 95 (270 B.C.)

(Hi) TF-1367, Holocene 2125 ± 135 (176 B.G.)
Shells; depth 4 m, Field no. Loc 30/1972.
Comment: surface 4 m above High water level.

(iv) TF-1368, Holocene 4005 ± 125 (2055 B.C.)
Shells; depth 4.90 m, Field no. Loc 31/1972.

10. ASLA, DISTRICT SATARA

TF-1178, Late Pleistocene 10035 ± 125 (8085 B.G.)
Fresh water shells; 2-5 m above the bed level of River Krishna; Field no. 2.

TAMIL NADU

11. KANCHIPURAM, DISTRICT CHINGLEPUT

TF-1216, Early historical 2145 ± 95 (195 B.C.)
Charcoal; Locus III-IV, layer 13A, depth 4-95 m, Field no. KCM-4.

UTTAR PRADESH

12. KHALANA, DISTRICT AGRA

TF-1228, P. G. Ware levels 2485 ± 95 (535 B.C.)
Charcoal; Locus KHI-L, II-IV, layer 9, depth 2-6 m, Field no. Khalana T4/68.

13. DEOGHAT ON BELAN, DISTRICT ALLAHABAD

TF-1245, Gravel III 19715 ± 340(17765 B.C.)
Shell from Gravel III.
Comment: shells are not reliable samples since they can exchange Carbon-14 with surrounding ground water carbonates.

14. SARAI NAHAR RAI, DISTRICT PRATAPGARH

TF-1356 and 1359, Microlithic (?) 2940 ± 125 (990 B.C.)
Bones; Locus Q1+earth '/AB, B/CL-1; depth 2 to 4 cm; sample no. AU/SNR/PTG/1972-l/HR and (11) Hearth 2/B4, depth 2-6cm; sample no. AU/SNR/PTG/1972-8/4R.
Comment: Both the samples were mixed for dating purposes.

VI. PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATIONS[1]

The results of the investigation of materials from several sites carried out in the last three years is reported here.

BIHAR

1. CHIRAND, DISTRICT SARAN.—The plant remains recovered from layer 17 of CRD 11 (Neolithic levels) include Wheat, *(Triticum sphaerococcum),* Barley *(Hordeum* spp.), Rice *(Oryza sativa* and *Oryza rufipogon* or some other wild rice), *Pisum arvense, Lathyrus sativus* and Lentil *(Lens culinaris).* There are few other seeds not yet identified. This is the first Neolithic site in northern India which has yielded a variety of plant remains constituting the plant economy of the Neolithic people at Chirand.

DELHI

2. PURANA QILA, DISTRICT NEW DELHI.—Impressions and compressions of Rice *(Oryza* spp.) and of small grains probably of Millets have been recognized in the brick samples numbered 27, 41 and 45, belonging to the NBP Ware.

The impressions of Rice in the brick sample No. 19 probably of the Gupta Period are smaller than those in the brick samples from the NBP Ware.

Pollen analysis of four bricks (sample No. 45, NBP Ware) has yielded pollen grains of grasses, Compositae, *Cheno-Amaranths, Holoptelea, Labiatae, Umbellifereae, Acanthaceae* and spores of fern. The total number of pollen grains varies from a few to around 170 per sample. Winged pollen grains of *Pinus* spp. also occur. These are obviously due to long distance transport.

A few impressions of fragmentary leaves and an unidentified fruit of an angiosperm and fragments of an insect's body are the other remains discovered.

GUJARAT

3. SURKOTADA, DISTRICT KUTCH.—Two lumps of charred masses recovered from this site (Locus X A4,Qd. 1, Layer 5, Depth. 1-6 m), have yielded several hundred car bonized seeds of wild plant species (pls. XLVI, 4; XLVII and XLVIII, 8-10) such as of grasses, sedges, *Cheno-Amaranths, Polygonal,? Euphorbia,* etc. So far only 50 seeds, earlier referred to *Ragi, Elusive caracara,* have been found to belong to that of *Set aria* spp. It is not possible at this stage to say whether the seeds belong to wild or cultivated *Set aria,* perhaps they belong to both.

MAHARASHTRA

4. INAMGAON, DISTRICT PUNE.—The plant remains come from the Malwa, the Early and the Late Jorwe levels. During the Malwa period the plant economy consisted of

[1]Contributed by Dr Vishnu-Mittre and R. Savithri of the Birbal Sahni Institute of Palaeobotany, Lucknow.

(pl. XLVIII, 1-7) Barley, Lentil, *Vigna radiata (Phaseolus radiatus), Dolichos spp., Pisum spp., Lathyrus* spp., *Vicia* spp., *Zizyphus* spp., Date plam and *Buchanania* spp (chironji}.

The plant economy during the Early and Late Jorwe periods was more or less the same except that Wheat (*Triticum compactum)* was introduced at this site during the Early Jorwe period and Rice *(Oryza sativa)* and Jowar *(Sorghum* sp. cf. *vulgare)* were introduced after the end of the Early Jorwe period (pl. XLVI, C).

5. SONEGAON, DISTRICT PUNE.—The carbonized material consists of charred kernels of Wheat identified as of *Triticum sphaerococcum.*

RAJASTHAN

6. NOH, DISTRICT BHARATPUR.—From the burnt clay sample NOH. Tr-K. XII' XIII (S), the black-and-red ware (Pre-PGW) levels, only impressions of Rice (pl. XLVI, A and B) have been discovered.

The sample from the Mauryan levels, NOH. Tr. K, XI' (F) has yielded remains of Rice and *Vigna radiata (Phaseolus radiatus,* moong), whereas in the sample no. Tr. K, O-II' (4) from Kushan levels, Barley has been discovered (pl. XLVI, E).

From an unlabelled sample (probably of Pre-PGW horizon, vide personal communication from the excavator) of burnt clay differing in texture from the sample from black-and-red levels, carbonized seeds of *Dolichos biflorus,* and *Vigna radiata (Phaseolus radiatus)* have been discovered.

7. KALIBANGAN, DISTRICT GANGANAGAR.—The sample no. Ic, KLB-l/XA 17, Locus-A17, 847 X A18, 9-02 depth 2.50, stratum 17, has been found to contain several thousand charred grains of hulled Barley, 50 grains of naked Barley and one seed of *Pisum arvense.*

In the material preserved at the Central Antiquity Section, Safdarjang, New Delhi, a seed of *Cicer arietium* (Chenna) was identified. The impressions on the terracotta cakes are not of Rice but of Barley.

VII. MUSEUMS

1. SITE-MUSEUM, AHAR.—Security arrangements for the finds were strengthened by providing two steel almirahs.

2. RAJPUTANA MUSEUM, AJMER.—The old show-cases were replaced with new ones. The pedestals were painted and labelled. A new gallery, which is near completion, will be added to the Museum.

3. GOVERNMENT MUSEUM, ALWAR.—The handicrafts section of the Museum was reorganized. Descriptive labels were provided to Rajput and Mughal paintings in the painting gallery.

4. ALLAHABAD MUSEUM, ALLAHABAD.—The archaeological section of the Museum was further enriched by the acquisition of coins, beads, terracotta objects, sculptures and copper images.

Out of the five copper coins, four represent the usual lanky bull type while the fifth contains the legend 'Kasabia', and is datable to the second century B.C. The beads represent both animal-and bird-shaped varieties made out of agate and other semi-precious stone material. The three terracotta figurines comprise a three-headed goddess belonging to the Kushan period, from Pachomi, District Bareilly, a seated Yaksha figurine, used in a toy cart, holding a hammer in his right hand, from Kausambi, and a rectangular plaque, depicting a man fighting with two winged lions standing on either side. Amongst the stone sculptures, mention may be made of a Buddha or Bodhisattva image from Bhita, bearing a fragmentary Brahmi inscription of about third century A.D., a four-armed figure of Vishnu, datable to *circa* eighth century A.D. from the neighbourhood of Kausambi and a stone slab, depicting a donkey copulating with woman, from Daranagar near Kara, datable to about twelfth centuy A.D. The copper image represents a head of a small Buddha from Kausambi.

5. ARCHAEOLOGICAL MUSEUM, AMARAVATI.—With a view to giving the visitor an idea of the railings and the enclosed *maha-stupa,* a part of the railing of the *maha-stupa* was constructed in the courtyard with upright pillars, cross-bars, coping stones, etc.

6. ARCHAEOLOGICAL MUSEUM, AMBER.—Steel almirahs were provided for affording security to the antiquities.

7. SHRI BHAVANI ART MUSEUM AND LIBRARY, AUNDH.—Besides the usual cleaning and arranging of the museum exhibits, six statues in the garden were fenced against damage by visitors. Shri A. B. Pant donated some Egyptian, Indonesian and Sikkimese art objects to the museum.

8. STATE MUSEUM, BHARATPUR.—In order to provide adequate light and air, tube lights and fans were provided in the galleries. A gallery is being organized for the display of the excavated material from Noh.

9. ORISSA STATE MUSEUM, BHUBANESHWAR.—The acquisitions for the Museum consisted of: six jaina sculptures from Koraput and images from Tigiria Tahsil; seven microliths; seventy-one neoliths, sixty-nine copper bangles; about one hundred grams steatite beads; four horn fragments; ten human teeth; sixteen arms, including swords; daggers and spears; four hundred and fifty-one musical instruments; one hundred and ten traditional ornaments and a number of agricultural, fishing and hunting implements; ninety-two objects of art and craft including paintings, masks, toys, works of leather, brass, wood, ivory, terracotta, textile; ninety-one specimens of natural history, and three hundred and seventy-two palm leaf manuscripts. Additions and alterations were also made in various galleries. The gallery of musical instruments was completed.

10. ARCHAEOLOGICAL MUSEUM, BIJAPUR.—Descriptive labels, both in English and Kannada, were prepared for many of the exhibits in the different galleries of the museum.

11. GANGA GOLDEN JUBILEE MUSEUM, BIKANER.—Scientific display and cataloguing of objects was carried out.

12. ARCHAEOLOGICAL MUSEUM, BODH-GAYA.—Ten beautiful sculptures of medieval period were acquired by the Museum from village Shishwar (Khijarsarai block), District Gaya. Among these, the images of Varaha and Vamana, belonging to the tenth century A.D., are noteworthy.

13. MUSEUM OF DEPARTMENT OF ANTHROPOLOGY, UNIVERSITY OF CALCUTTA, CALCUTTA.—The sections of ethnography and prehistory were reorganized. The arrange ment of specimens were made on the basis of geo-ethnic and culture-history.

14. ARCHAEOLOGICAL GALLERY, WEST BENGAL, CALCUTTA.—Noteworthy objects acquired by the museum include: a stele in black basalt carved with Jain Tirthankara Rishabhnatha (pl. XLIX A), datable to *circa* tenth century A.D. ; a Vishnu figure of eleventh (pl. L A) century; a four-armed Gauri or Parvati and Surya, datable to eleventh century (pl. XLIX B & C). The gallery was enriched by the donation of several sculptures by Shri R. N. Mallick. The collection includes a beautiful head of an *apsara* in red sandstone, assignable to the second century A.D.

15. GOVERNMENT MUSEUM, CHITTAURGARH.—About fifty sculptures were provided with pedestals. Four show-cases for the display of diagrams were made available.

16. CHANDRA DHARI MUSEUM, DARBHANGA.—The exhibits were displayed in new show-cases with modern techniques of lighting. The archaeological gallery was enriched by the acquisition of terracottas from Balirajgarh and other sites.

17. ARCHAEOLOGICAL MUSEUM, RED FORT, DELHI.—The reorganization of the Bahadur Shah Gallery was completed and was thrown open to the public. In this Gallery a few personal objects of the last Mughal Emperor Bahadur Shah and his queen Zeenat Mahal are displayed along with other contemporary objects, viz., arms, paintings, letters, journals, etc.

18. ASSAM STATE MUSEUM, GAUHATI.—The Museum acquired an image of Bhairava, carved on a block of granite, datable to *circa* eighth century A.D.; pedestal of a Surya image

depicting seven horses and a wheel of the chariot, datable to *circa* tenth-eleventh century A.D. Both the images were found at Hengrabari, Dispur, District Gauhati. A small Siva-linga carved out of black basalt found from Saraniga, Gauhati, was also added to the collection.

19. ARCHAEOLOGICAL MUSEUM, HALEBID.—One more copper coin belonging to seventeenth century A.D. was acquired from Madihalli about twelve km from Halebid. This coin shows a chequered pattern on the reverse and the representation of an elephant on the obverse. Another significant acquisition is that of fifty blocks of copper found inside an earthen pot, each weighing about ten grams.

20. ARCHAEOLOGICAL MUSEUM, HAMPI.—The unaccomplished work of shifting the sculptures, exhibited in the midst of monuments at Hampi ruins, were taken up and completed. The Museum added to its collection three sculptures, two from Hampi Power House area and one from Hosa Malpanagudi area on way to Hospet, nearly 5 km away from Kamalapuram. Out of these three sculptures, the slab representing Sita under Asoka tree guarded by a Pratiharini is one of the finest pieces in the collection of the Museum. The other two sculptures are of Vishnu and a Saivite deity.

21. ARCHAEOLOGICAL MUSEUM, HOSHIARPUR.—About forty broken or damaged architectural pieces of sculptures were added to the collection. The most beautiful among these are an elephant and a Siva sculpture, datable to tenth century A.D. from Majhur, District Jullundur and Munak, District Sangrur.

22. STATE MUSEUM, HYDERABAD.—During the period under review a total number of three thousand five hundred and eleven objects were acquired for the museum.

23. GOVERNMENT CENTRAL MUSEUM, JAIPUR.—Reorganization and development work was taken in hand and suitable colour, in oil paint, matching with the background was done on show-cases inside the galleries. To save the paintings and other delicate exhibits from the dazzling sun rays, curtains were provided on windows and doors, and the glass panes were painted. The display was rearranged in some show-cases in the lower galleries. The descriptive labels were made more useful. Steel almirahs were purchased for keeping important and costly exhibits. Iron shutters were put on some doors and iron bars were provided to some of the openings as a measure of safety.

24. ARCHAEOLOGICAL MUSEUM, JHALAWAR.—Regular upkeep of the museum was adhered to and two new sculptures were added in the museum collection.

25. KOLHAPUR MUSEUM, KOLHAPUR.—Reorganization of the decorative art section was completed and the exhibits were displayed in eleven show-cases. The newly developed section was thrown open to public.

26. ARCHAEOLOGICAL MUSEUM, KONARAK.—One Oriya palmleaf manuscript of late nineteenth century—a temple chronicle, was acquired by the museum. The entire museum building was treated against the menace of white ants.

27. MUSEUM AND SARASWATI BHANDAR, KOTAH.—About forty sculptures from Jalmahal, Kotah, were acquired for the museum.

28. ARCHAEOLOGICAL MUSEUM, FORT ST. GEORGE, MADRAS.—In order to improve the display in the Museum, painting work was continued in Gallery No. 5. Organizing of Wodeyar's Gallery and French Gallery was taken up. Five wall show-cases in the above two galleries were prepared. The reserve collection of this Museum was also taken up for reorganization.

29. GOVERNMENT MUSEUM, MADRAS.—One metal image of crawling Krishna from Avoor village, Taluk Papanasam, District Thanjavur; three metal images of Vishnu, Sri Devi and Durga, from Chettipalam village, Taluk Thiruthuraipoondi, District Thanjavur; six metal figures of Somaskanda, Ganesa, Chadrasekhara, Ayyanar, Devi and trident, from Nangaimozhi village, Taluk Tiruchendur, District Tirunelveli; six metal figures representing Nataraja, Umasahita Devi, Balasubramanya, a small image fitted on a pedestal and a lamp, from Kattakkudi village, Taluk Mannargudi, District Thanjavur; and six metal figures, Hanuman, two pedestals in the shape of tortoise, two rectangular pedestals with *prabha* and one *prabha,* from Vengampattu village, Taluk Arkonam, District North Arcot, were acquired as treasure trove finds.

Six wood carvings—Ekapadamurti, Appar, Sambandhar, Manickkavachaka, Krishna and Sarasvati—from Sri Kothavaleeswara Devasthanam, Koilur, District Ramanathapuram (through Sivaganga Devasthanams), five stone sculptures (fragments) from Customs House, Bombay and five wood carvings—Sarabhamurti, two *dvarapalakas,* Sadasiva, and erotic scene from Sri Dandayuthapani Devasthanams, Palni, District Madurai, were purchased and added.

Five terracotta figurines were provided with pedestals. Ten printed (faded) labels in the Bronze Gallery were replaced by painted labels.

30. ARCHAEOLOGICAL MUSEUM, MATHURA.—Thirty objects, including sculptures, terracottas and one copper ring, were acquired during the period under review. Amongst them the following pieces are noteworthy: sculpture representing human faced winged Garuda with hands clasped in adoration in buff sandstone of Kushan period from Badriganj, Mathura city; torso of *yaksha* wearing a scarf hanging below his knees in dull red standstone; shaft, representing two composite humped bulls seated back to back from Mathura; pedestal of a Bodhisattva image with a mutilated foot and an ins cription of Kushan period in four lines mentioning *Mathura* (pi. L B), from Mathura; stone sculpture, representing Kartikeya holding lance in his left hand and to his right is seen a female deity probably of Shashthi. All these sculptures belong to the Kushan period.

The Medieval gallery, which was under preparation for the last few years, has been completed and thrown open to the public. It represents sculptures from *circa* seventh century to about twelfth century A.D.

31. GOVERNMENT MUSEUM, MOUNT ABU.—The reorganization for exposition work was undertaken to present a scientific look to the Museum.

32. CENTRAL MUSEUM, NAGPUR.—One small stone image of Lord Vishnu, of late eighteenth century A.D., found from Chandrapur, was added to the Archaeology Section of the Museum. The Gandhara sculptures from the Central Hall were shifted and were re-arranged in the Sculpture Gallery.

In Anthropology Section, the show-cases of arms and armaments were re-arranged. New lighting arrangement was introduced in few show-cases of this section.

33. ARCHAEOLOGICAL MUSEUM, NAGARJUNAKONDA.—Preparation of index-cards with affixing of the photographs of the reserve sculptures and preparation of photo-albums for exhibited sculptures and reserve sculptures were in progress.

34. ARCHAEOLOGICAL MUSEUM, NALANDA.—The two side entrances of the museum were closed permanently for effective security of the galleries.

35. NATIONAL MUSEUM, NEW DELHI.—The National Museum received a rare illustrated folio of the *Hamzanama* of the Mughal School (pl. LI), from the Cleaveland Museum of Art, U.S.A., in exchange of two terracottas of the Sunga and Gupta periods.

The Museum also acquired, through pruchases, paintings of the Mughal, Deccani, Rajasthani and Pahari Schools during the year. Twenty terracottas, fifty bronzes and fifty-five sculptures were acquired for the Archaeology Section of the National Museum. Among the sculptures, the image of Siva combining the three aspects of Bhairava, Gajantaka and Andhakantaka belongs to tenth-eleventh century A.D. The unique sculpture of dancing Ardhanarisvara, though badly damaged, is quite interesting in the realm of Indian iconography. It was found at Maihar in Satna District of Madhya Pradesh and is assignable to the Chedi Period, *circa* eleventh century A.D. The bronze images of Ganesa of the Pala period, *circa* ninth century A.D., Manjusri from Kashmir and the Visvabhisekha from south India are some other outstanding acquisitions in the Archaeological Section.

36. SHEESH MAHAL ART GALLERY, PATIALA.—In the Sheesh Mahal at Patiala, known for its concave and convex glass work and also for its painted chamber, an Art Gallery with miniature paintings was set up in order to make the monument more attractive as also to enhance its educative value.

37. PATNA MUSEUM, PATNA.—The Museum acquired: five hundred and forty-nine silver coins of East India Company from Bhagalpur; five hundred and forty-seven silver Mughal coins from Panki, District Palamu; six stone and one brass image from Lakisari, District Monghyr; and marble image of a Jain Tirthankara from Saratha Daulatganj, District Palamu; one black stone, image of Vishnu from District Motihari; and an Arabic inscription from village Narhan, Raghunathpur Hakhand, District Siwam (Saran) belong ing to king Hussain Shah of Bengal.

38. ARCHAEOLOGICAL MUSEUM, SAGAR UNIVERSITY, SAGAR.—The coin cabinet of the Museum was enriched by the following finds: one hundred and twenty-six coins and two silver coins of Mathura, thirty-three clay sealings and twenty-eight beads of semi precious stones from Mathura. Most of the sealings belong to the Kushan and Gupta periods.

39. ARCHAEOLOGICAL MUSEUM, SANCHI.—About two hundred sculptures were transferred for better maintenance from the stores to the present godown.

The main hall, three galleries and the information-cum-office room of the Museum were freshly painted and the labels of the exhibited antiquities in the Museum-galleries were improved.

A stone base of pillar, showing inverted lotus mounted on an *amalaka,* with a square groove (12 x 12 cm and 7 cm deep) in its centre, was acquired by the museum. On two sides of the groove runs an inscription in late medieval Devanagari script, reading 'chella Suvamsupala'. The pointed side bears two small grooves for clamps.

40. ARCHAEOLOGICAL MUSEUM, SARNATH.—The galleries were given a new look of presentation by repainting the patches of walls and ceilings which had become ugly.

41. ARCHAEOLOGICAL MUSEUM, SANGHOL.—The display of the Museum was re arranged after adding newly discovered material. New labels were provided wherever necessary.

42. SHRI CHHATRAPATI SHIVAJI MAHARAJ MUSEUM, SATARA.—During the period under review, seven maps of forts, one gun, one elephant tusk guard, one hundred and eighteen playing card sets and two daggers were donated to the Museum by various individuals. The Museum purchased an iron fountain, one Sarangi, one *tentuvadya,* a candle stand, one palanquin, two guns, two swords, two candle-shades made of glass, two lamp stands, two parts of a glass chandilier, etc.

43. GOVERNMENT MUSEUM, SHIMOGA.—Amongst the sculptures acquired by the Museum, the following deserve special mention: Mahishasuramardhini from Jamapur, Vishnu from Nittur Forest, Shoolabrahma from Kushkur and Kalabhairava from Gonibeedu. Most of them are ascribable to the twelfth century A.D.

44. ARCHAEOLOGICAL MUSEUM, SRIRANGAPATNA.—The chart and maps provided to the Museum were re-drawn and displayed on suitable pedestals, specially made for the purpose. A pedestal was provided to the Srirangapatna Fort model, exhibited in the ground floor of the Museum so as to make the display more educative. A hoard of five hundred and ninety-seven coins, acquired from Sri Biligiri Ranga Hills, was classified and accessioned.

45. PRATAP MUSEUM, UDAIPUR.—The Museum exhibits were properly cleaned and classified. Safe storage of exhibits, labelling and cataloguing remained in progress.

46. THE MUSEUM AND PICTURE GALLERY, VADODRA.—Amongst the outstanding acquisition of the year, mention may be made of a red stone four-armed deity holding in her right back hand a sword *(khadga)* from Mathura, datable to *circa* fifth century A.D. (pl. LI I A) and a black terracotta plaque depicting tantric pot-bellied deity Vighnantaka (pl. LII B), datable to *circa* twelfth century A.D., from Nepal. Some of the other objects acquired include stone sculptures from Mathura, one form Rajasthan, six terracotta figurines from Mathura, one old textile, a hand painted piece of later Mughal period with designs and an illustrated manuscript, subhodha namni patri paddhati, from Kataria Nagar, Kutch, written in v.s. 1808.

47. ARCHAEOLOGICAL MUSEUM, VAISALI.—On the occasion of Vaisali Mahotsava during Mahavir Jayanti, temporary display of the antiquities was arranged.

48. BHARAT KALA BHAVAN, VARANASI.—Two hundred and seventy objects were acquired which included silver punch-marked coins, current coins of India, sculptures and terracotta figurines, ranging from second century B.C. to tenth century A.D., terracotta beads and balls and a few potsherds of the Northern Black Polished Ware.

49. ARCHAEOLOGICAL MUSEUM, VELHA GOA.—The labels in English, giving in brief the period of governorship and the main incidents of that period, were typed and fixied to each of the portraits of Governors, displayed in the portrait gallery. The descriptions in Portuguese, found at the bottom of each Franciscan Martyr's painting, were translated in English. A map of Goa, showing the original provenance of the sculptures displayed in the sculpture gallery was prepared and kept on view in that gallery.

VIII. ARCHITECTURAL SURVEY OF TEMPLES

NORTHERN REGION.—The Temple Survey Project, Northern Region, under Shri_, _M D. Khare, surveyed the group of post-Gupta temples., at Hobart (District Guna Madhya Pradesh), as a result of which several beautiful Vaishnava and Saiva)sculptures were brought to light. The temples are in a very dilapidated state7 but they can be restored with the help of the architectural members, lying at the site. Each consisting of a *garbha-griha* and a small *mandapa* in front, the temples are profusely decorated.

SOUTHERN REGION.—The Temple Survey Project, Southern Region, under Shri .. _ H. Sarkar, surveyeHT"[1] continuation of the previous year, some more temples in District South Kanara (Mysore). It appears that the rectangular *garbha-griha,* mostly for enshrining the images of *sapta-matrikas,* attained some popularity in (Tulane) alongside the temples with an apsidal ground-plan, and of the latter category, the earliest is the Prasanna-Somesvara temple (fig. 2) at Udiyavara, (near Udipi) ascribable to the early eighth century A.D. Of the rectangular temples, the most important is the Rajarajesvari temple at_Polali (Taluk Mangalore) which in its original layout was possibly just a rectangular shrine granite, having its entrance from the east. At present, it is a double-storeyed structure, with a *suka-nasa* projection in front. There are two circumambulatory passages around the *garbha-griha,* the like of which has been noticed in the Virabhadra temple at Udiyavara, the early capital of the Alupas, and at Marvante (Taluk Coondapoor).

Like the Virabhadra temple at Udiyavara, the Rajarajesvari temple also enshr nes massive stucco images, perhaps originally of the *sapta-matrikas.* In the former are housed the images of Kaumari, Vaishnavi and Mahesvari, each with the characteristic *lanchhana* on the pedestal. At Polali, one of the huge stucco images, with a jackal as the *vahana,* may be taken to be Chamunda. On the contrary, the stone images of *saptamatrikas* discovered at places like Koteshwar (Taluk Coondapoor, District South Kanara) and Ullal (in Taluk Mangalore) are devoid of any vahana (pl. LIII A), the later group may be dated to the ninth century A.D. Perhaps the tradition represented by the stucco images in Tulane is the survival of an earlier trend from the Chalukyan country. It has, however, to be borne in mind that unicellular rectangular temples were popular also in the Maitraka tradition of Gujarat.

The Rajarajesari temple at Polali associated with number of inscriptions. That the present edifice was raised In the tenth century A.D. can be adduced from the discovery, by this office, of a Kannada inscription on the lintel recording the fact that the shrine was built by one Vasudevan. Two more inscriptions, copied here earlier have been ascribed to the tenth century A.D., referring to the Seven Divine Mothers as protectors of the Alupas thereby pointing to the existence of an earlier nucleus here. This is further corroborated by the presence of the Mahishasuramardini image of about the ninth century A.D., in the Durga-Paramesvari shrine, situated in the precincts of the Rajarajesvari temple. Significantly, both the shrines here have no *adhishthana* in the real sense of the term.

A word may be added here about the form of the Mahishasuramardini figure in the Tulu country. It portrays Durga in the pose of uplifting the hind part of Mahisha by holding the tail. These representations are datable to the ninth century A.D. on stylistic

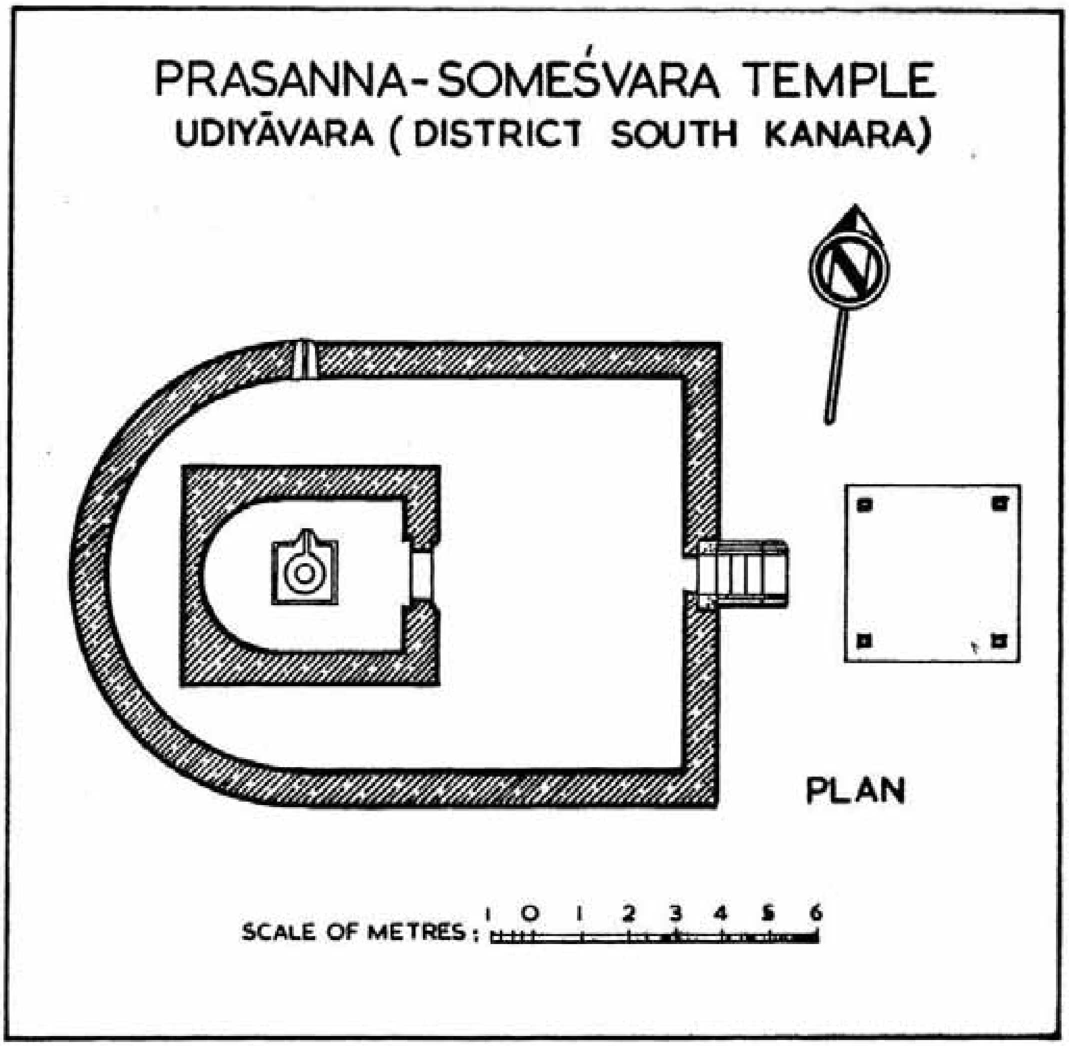

PRASANNA-SOMEŚVARA TEMPLE
UDIYĀVARA (DISTRICT SOUTH KANARA)
N
PLAN
SCALE OF METRES ; 1 0 1 2 3 4 5 6

Fig. 2

considerations. There are also images of Krishna, Vishnu, Subrahmanya and Surya (pl. LIII B), which may be ascribed to this phase.

Another temple, the Mahalingesvara temple (pl. LIV), at Vadarse (Taluk Udipi) yielding one of the earliest epigraphs of South Kanara. deserves special mention. Associated with a peristylar arrangement around the temple, it is a square *dvitala vimana* built in laterite. But its *adhishthana* consists of *upana, jagati, tripatta kumuda, kantha* with dentils and *pattika*. It has a *vedi* having floral designs alternating with cross-bar motif. Undoubtedly, the temple has been built in typical Kerala style, in that the square sanctum, without any projecting *mukha-mandapa,* is fronted by a detached *nandi-mandapa.* Furthermore, it is a *sandhara vimana* with a *pradakshinapatha* around the squre *garbha-griha* having its own *sikhara*. In other words, the *garbha-griha* is a miniature Dravida shrine housed inside a Kerala style of temple, with usual sloping roofs. In this temple also one notices *hamsa-valabhi,* a popular feature of the temples of Tulunadu. Stylistically, the temple cannot be dated before the eleventh century A.D., although the pillar inscription, in the compound of the temple, has been assigned to the middle of the seventh century A.D.

IX. PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

CENTRAL CIRCLE

Madhya Pradesh

1. FORT, ATER, DISTRICT BHIND.—The sunken and broken pavement of the court yard of Dewan-e-Khas was reset and renovated.

2. BUDDHIST CAVES 1 TO 7, BAGH, DISTRICT DHAR.—The collapsed portion of the rock, adjacent to the north of Cave No. 2, was cleared. Concreting the platform in front of Cave Nos. 4 and 5 is in progress.

3. DHARMASALA IN THE COMPOUND OF HOSHANG'S TOMB, MANDU, DISTRICT DHAR.—Relaying the concrete of the roof is in progress.

4. KAPOOR TALAO, MANDU, DISTRICT DHAR.—The bulged portions of the retaining wall of the *Talao* were dismantled and rebuilt as per original alignment.

5. NAHAR JHAROKHA, MANDU, DISTRICT DHAR.—The north-eastern portion of the compound was repaired.

6. FORT, ASIRGARH, DISTRICT EAST NIMAR.—The pathways within the fort were further improved by providing breast walls and stone pitching.

7. MAHADEO TEMPLE, ASIRGARH, DISTRICT EAST NIMAR.—The work of reconditioning the Dharmasala attached to the temple was completed.

8. BADAL MAHAL GATEWAY, CHANDERI, DISTRICT GUNA.—The bulged dry masonry enclosure wall was dismantled and re-erected in cement mortar.

9. JAMI MASJID, CHANDERI, DISTRICT GUNA.—The sunken and broken pavement of the courtyard and corridors was reset and renovated.

10. KOSHAK MAHAL, CHANDERI, DISTRICT GUNA.—The pavement done last year was further improved by pointing. The open area around the basement was improved.

11. MANSINGH'S PALACE, GWALIOR FORT, DISTRICT GWALIOR.—The open courtyard of the out-houses, attached to the palace, was paved with flag stones.

12. TELI-KA-MANDIR, GWALIOR FORT, DISTRICT GWALIOR.—In continuation of the last year's work, the paving and the pointing of the floor continued.

13. CHAUSATH YOGINI TEMPLE, BHERAGHAT, DISTRICT JABALPUR.—The undermined hill on which the temple stands was provided with stone pitching to check further erosion.

14. BRAHMANICAL ROCK-CUT TEMPLES, DHAMNAR, DISTRICT MANDASOR.—A wall has been built on both sides of Suraj pole gate, and undermined portions of the rock-cut facade was repaired with R.G. concrete.

15. FORT, RAISEN, DISTRICT RAISEN.—Removal of debris and restoring the fallen portions of the fortification wall were undertaken.

16. BUDDHIST MONUMENTS, SANCHI, DISTRICT RAISEN.—The fencing work of archaeological area was continued. The cement concrete road, leading to the *stupa,* was streng thened and repaired by providing pitching and changing of worn out portions.

17. TEMPLE, BAMODA, DISTRICT SAGAR.—The loose core of the *sikhara* was packed and grouted.

18. FORT, GARHPAHRA, DISTRICT SAGAR.—The debris lying around the Sheesh Mahal was cleared off and area levelled.

19. THE WALLS OF THE CITADEL, FORT KHIMLASA, DISTRICT SAGAR.—The top of the fortification wall has been water-tightened.

20. TEMPLE OF MAHADEO, PALI, DISTRICT SAGAR.—The approches to the temple were reconditioned and the floor of the platform repaired.

21. MONASTERY, TERAHI, DISTRICT SHIVPURI.—The clearing of debris to expose the structures was undertaken.

22. MALADEVI TEMPLE, GYARASPUR, DISTRICT VIDISHA.—The construction of retaining wall to a height of 5 m was continued.

23. BHIMGAJA, PATHARI, DISTRICT VIDISHA.—The broken and ugly enclosure wall around the pillar was dismantled and a new wall erected in *chinkhari* stone masonry.

24. UDAYESHWAR MAHADEVA TEMPLE, UDAYAPUR, DISTRICT VIDISHA.—The work of restoring the stone pavement of the courtyard is in progress.

Rajasthan

25. OLD TEMPLE, NEAR CHANDRABHAGA, JHALRAPATAN, DISTRICT JHALAWAR.—The area around the temple was fenced, and the floor was paved with stones.

26. TEMPLE WITH INSCRIPTIONS, KANSWA, DISTRICT KOTAH.—The compound wall of the temple-complex was repaired and extended.

EASTERN CIRCLE

Assam

27. AHOM RAJA'S PALACE, GARHGAON, DISTRICT SIBSAGAR.—In continuation of the previous year's *(1971-72)* work the missing vaulted roof and ornamental dwarf columns of the palace were rebuilt. Besides underpinning and filling up of the open joints in the eastern wall of the complex, the terracing of the roof was also undertaken. Rank vegetation was removed, and the fencing of the southern boundary was completed.

28. KARENGHAR PALACE, JAYASAGAR, DISTRICT SIBSAGAR.—Underpinning and pointing were carried out on the southern wall of the Palace to strengthen the structure.

Orissa

29. MONASTERY NO. 1, RATNAGIRI, DISTRICT GUTTACK.—In continuation of the last year's (1971-72) work, the sunken stones of the pavement were reset in lime-cement mortar.

30. GROUP OF TEMPLES, BHUBANESWAR, DISTRICT PURI.—Th damaged wire netting covering the ceiling of the *jagamohana* of the Lingaraja temple was replaced. Pointing, resetting of dislocated stones, fixing of expanded metal doors, etc. were carried out in the main as well as in the subsidiary shrines of the Lingaraja temple.

31. SUN TEMPLE, KONARAK, DISTRICT PURI.—The levels of the pathway and the turf around the temple were lowered to prevent water-logging. The pathways were laid with *morum.*

32. CAVES, UDAYAGIRI-KHANDAGIRI, DISTRICT PURI.—In continuation of the previous year's work *(1971-72),* the cracks inside the caves were filled in. The exterior surface of the caves were treated with cement concrete for the easy flow of rain water. Concrete benches were provided for the public under a tree.

West Bengal

33. GROUP OF TEMPLE, NANOOR, DISTRICT BIRBHUM.—The *sikharas* of all the Siva temples were made watertight after removing vegetation. The roof and the platform of the flat-roofed temple were treated with fresh lime concrete. Dislodged ornamental plaster, missing portion of pillars, walls and arches were repaired. Besides filling up of the crackes, glass tell-tales were fixed to observe their further development.

34. HAMSESVARI TEMPLE, BANSBERIA, DISTRICT HOOGHLY.—The deep-rooted trees were removed and the resultant damages repaired. Filling up of the cracks and renewing of the plaster were other items of repairs undertaken.

35. KOTWALI GATE, GAUR, DISTRICT MALDA.—The core of the western bastion was repaired with lime cement mortar.

36. QUDAM RASUL MASJID, GAUR, DISTRICT MALDA.—The repair of the compound wall was completed.

37. CHAMKATI MOSQUE, MALDA, DISTRICT MALDA.—Besides some minor repairs to the monument, the core brickwork on the north-eastern corner was repaired.

MID-EASTERN CIRCLE

Bihar

38. SHAMSHER KHAN'S TOMB, SHAMSHERNAGAR, DISTRICT AURANGABAD.—Damaged and porous lime plaster all round the plinth was removed and fresh lime plaster mixed with cement was laid. Damaged moulded plaster on the pillars of the tomb was also repaired. Fresh lime concrete floor was laid in the main chamber and verandah enclosed by the walls. Tops of the walls of the verandah on the east and south were water-tightened by laying concrete mixed with cement.

Top of the compound wall on the west was water-tightened and open joints of the brick masonry filled up with toned lime surkhi mortar mixed with cement. Vegetations grown on the high walls were uprooted.

39. RUINED FORTRESS, NANDANGARH, DISTRICT CHAMPARAN.—In continuation of the previous year's work *(1971-72),* resetting of brick work in the walls of the southern side, floor of the eastern, western and southern sides of the platform and the top portion of the floor around the *stupa* were completed. Recessed lime pointing was also done after removing grass and vegetation, etc. The open area towards south was fenced while the old fencing was repaired and painted.

40. EXCAVATED REMAINS, KUMRAHAR, DISTRICT PATNA.—Rain water accumulated on the floor of the pillared hall during the rainy season was pumped out. Reconstruction of the damaged stair-case leading to the pillared hall and repairs to barbed wire fencing were executed. Clearance of grass and vegetation was also attended to.

41. EXCAVATED REMAINS, NALANDA, DISTRICT PATNA.—The tops of walls of temple no. 2 and the Monastery no. 4 were made watertight by resetting two to three top courses and filling open joints of brick work. The patches of brick work damaged during the rains were repaired to save from further deterioration. Vegetation was cleared from the walls and compounds of the monasteries and temples.

42. ANCIENT SITE, RAJGIR, DISTRICT PATNA.—Necessary repairs, such as taking out and resetting two top layers of bricks of Jaina shrines on the top of Via Bhargiri hill, laying fresh concrete on the path and floor around the Maniyar Math, painting tin shed and iron work, constructing damaged portion of the fort wall in front of Burmese temple and extensive jungle clearance from all the sites were executed.

43. BUKHTIAR KHAN'S TOMB, MALIK SARAI, DISTRICT ROHTAS.—The miniature domes around the main dome were rendered watertight by removing the decayed plaster and replastering, matching the original. Decayed patches of lime concrete of the roof terrace and floor of the main dome and verandah were repaired.

44. SHER SHAH'S TOMB, SASARAM, DISTRICT ROHTAS.—The construction of collapsed wall of the tank towards south which was in progress was completed. Lotus and lycinth grown up inside the tank were partially removed.

Uttar Pradesh

45. THE SITE OF STUPA AND MONASTERY OF THE SAKYAS, PIPRAHWA, DISTRICT BASTI.—In continuation of the last year's work, the area around the eastern and southern monasteries and the main *stupa* was cleared of debris to find out the actual layout. The exposed portions of the brick work were made watertight by resetting top layers of walls and filling open joints of brick work. The roots of big trees in the monastery were removed as far as possible and the site was kept neat and tidy throughout the year.

46. EXCAVATED REMAINS, BHITRI, DISTRICT GHAZIPUR.—Tops of all the walls of the three sites excavated by the Banaras Hindu University in the past, situated near the Skanda Gupta Pillar, near Rouza and Mahadeva temple on the bank of the river Gaugi, were water-tightened after removing two top layers of bricks and resetting the same in lime surkhi mortar mixed with cement. All the open joints of the brick masonry and stone pavements of all the three sites were filled up with toned lime surkhi mortar mixed with cement, after removing grass and vegetation roots, mud, etc.

47. FORT, JAUNPUR, DISTRICT JAUNPUR.—Underpinning the hallowed brick-work in the fort wall towards south, replastering inside Hawalat Khana, Mosque, Hamam and bastion in the north-eastern corner, laying fresh lime concrete inside the Mosque Hamam and main entrance gate, consolidating kankar road from main entrance to the Mosque and grouting and filling the wide and deep cracks of bastions flanking towards north of second gateway were executed.

48. JHANJHARI MASJID, JAUNPUR, DISTRICT JAUNPUR.—Repairs to the floor, water-tightening the roof, repairs to the turn-style gate, painting doors and windows and removal of grass and vegetation from all over the monument were executed.

49. SHAH FIROZ TOMB, JAUNPUR, DISTRICT JAUNPUR.—Repairs such as recessed lime pointing to the wide and deep joints in the brick work of the plinth, edging of the broken plaster, relaying fresh concrete of the floor and painting doors and windows were executed.

50. QULICH KHAN'S TOMB, JAUNPUR, DISTRICT JAUNPUR.—Very wide and deep cracks in the vaulted roof of the verandah around the main dome were grouted. Under pinning of the hollowed masonry in the structure and the plinth, filling open joints of brick work, propping up the overhanging portions with brick pillars and removal of grass and vegetation from all over the monument were attended to.

NORTH-WESTERN CIRCLE

Delhi

51. JAMI MASJID, DELHI.—In continuation of the last year's work *(1971-72,* p. 110), the weathered and decayed marble slabs of the intrados were replaced with new ones.

52. PURANA QILA, DELHI.—In continuation of the last year's work *(1971-72,* p. 111), the fortification wall and bastions (pl. LV), mainly between *Talaqi* Darwaza and the main gate was extensively repaired. This included: restoration of the fallen portion of the fortification wall; and consolidation of loose rubbles on the top of the wall in toned cement morter without disturbing the uneven, rugged and runied look. Besides, the face of the wall which was full of moss, lichen and stains, was cleaned after pointing the joints with toned mortar (pl. LVI).

53. QUTB MINAR, DELHI.—In continuation of the last year's work *(1971-72,* p. I11), holes were drilled around the base of the Minar and liquid cement was injected into the loose rubble masonry surrounding the platform of the ashlar masonry. Grouting was done under low pressure to avoid any disturbance in the equilibrium of the Minar.

Haryana

54. SHEIKH CHILLI'S TOMB, THANESAR, DISTRICT KARNAL.—The general apearance of the tomb was greatly improved by laying out lawns and flower beds. Causeways to the structure were provided. The enclosure wall was repaired by pointing and underpinning.

Himachal Pradesh

55. FORT, KANGRA, DISTRICT KANGRA.—The damaged portions of the fortification wall near Ranjit Singh Gate were repaired in rubble stone masonry. Gun-Slits in the wall, matching with the original, were also provided. The outer boundary wall was reconstructed. The temple and palace areas were cleared of debris. Extensive pointing in the fortification and in the extant palace walls was done.

56. FORT, NURPUR, DISTRICT KANGRA.—The flight of steps leading to the Devi's temple was constructed.

57. BUDDHIST MONASTERIES, TABO, DISTRICT LAHUL AND SPITI.—The roof of Duwang (Gumpha) monastery (pl. LVII) was made watertight by changing of worn-out wooden planks with double layers of polythene sheets and finally, spreading a thick layer of 2-3 cm of earth on the planks. The reconditioned terrace was given a proper slope for drainage. The parapet of the roof was also made watertight. A good number of holes in the temple wall were filled and replastered, matching with the original(pl. LVIII). Wooden supports were provided to the sagging ceilings of Chambo-Chibo and Lanchedbo gumphas.

Punjab

58. FORT, BHATINDA, DISTRICT BHATINDA.—The floor on the south-eastern terrace was reconditioned. The parapet of the terrace was repaired by underpinning of the walls.

Rajasthan

59. NEELKANTH TEMPLE, GARH, DISTRICT ALWAR.—In continuation of the last years work *(1971-72,* p. I11), the area was dressed up, and scattered sculptures were arranged in a shed.

Uttar Pradesh

60. ASOKAN ROCK-EDICT, KALSI, DISTRICT DEHRA DUN.—In continuation of the last year's work *(1971-72,* p. 112), the path leading to the rock-edict was relaid. In course of the clearance and levelling of the area, huge boulders and rocks were removed. The dwarf boundary was extended towards northern and southern sides.

SOUTHERN CIRCLE

Kerala

61. JAIN TEMPLE, WYNAD, DISTRICT CALICUT.—Jungle clearance was done in the compound and gravel was spread along the foot-path.

62. MATTANCHERRY PALACE, COCHIN, DISTRICT ERNAKULAM.—The wooden ceiling of the Palace was varnished.

Mysore

63. TIPU SULTAN PALACE, BANGALORE.—The leakage in the western wing of the Palace was arrested by providing two tiers of tiles and plastering it by combination mortar. Ornamental teak wood boards are provided wherever missing. The doors, windows and pillars are painted and the missing glass panels are refixed.

64. VIDYASANKARA TEMPLE, SRINGERI, DISTRICT CHIKKAMAGALUR.—A steeped embankment in random rubble in cement concrete was raised on the eastern side to protect the temple from river erosion.

65. FORT AND ELEPHANT, MERCARA, DISTRICT COORG.—The fallen revetment to wards the eastern side of the Fort was reconstructed in brick masonry and cement mortar and the surface was plastered. The third entrance gateway was water-tightened. Over grown vegetation on the revetment was cleared.

66. KEDARESWARA TEMPLE, HALEBID, DISTRICT HASSAN.—The coping masonry of the wall was plastered with lime mortar.

67. NARAYANASWAMY TEMPLE, MELKOTE, DISTRICT MANDYA.—The broken stone beam over the *balipitha* was replaced and its terrace water-tightened. On the southern and western sides, the damaged outer cloister was refloored in concrete. The original features of the stucco figures were exposed wherever possible and the broken portions strengthened.

68. JUMMA MASJID, SRIRANGAPATNA, DISTRICT MANDYA.—A brick masonry wall was constructed in the Khan Khana portion and a door was provided for it.

69. RANGANATHA TEMPLE, SRIRANGAPATNA, DISTRICT MANDYA.—The roof of the Alwar shrine was water-tightened. The drain from the main temple was covered by M. S. grill. Teak wood doors, replacing the rolling shutter, were fixed in keeping with the ancient look of the monument.

70. GROUP OF MONUMENTS, BANDALIKE, DISTRICT SHIMOGA.—Vegetation was cleared over a number of monuments.

71. AGHORESWARA TEMPLE, IKKERI, DISTRICT SHIMOGA.—The dead material used for water-tightening of the terrace was removed. Exposing the original, grouting and pointing of the *vimana* to arrest leakage are in progress.

Tamil Nadu

72. CHENNARAYAPERUMAL TEMPLE, ADIYAMANKOTTAI, DISTRICT DHARMAPURI.—The walls in the southern and western sides were reconstruced, using old stones.

73. JAIN ROCK-CUT TEMPLE, SITTANNAVASAL, DISTRICT MADURAI.—The terrace of the temple was water-tightened.

74. SIVA TEMPLE, VISALUR, DISTRICT MADURAI.—Ashlar stone work was redone wherever necessary. Damaged portions of the walls were underpinned.

75. ROCK-CUT TEMPLE, MAHENDRAVADI, DISTRICT NORTH ARCOT.—Under special repairs, the remaining part of the area was fenced by barbed wire.

76. NARASIMHASWAMY TEMPLE, NAMAKKAL, DISTRICT SALEM.—The dilapidated *yagasalai* was dismantled and rebuilt as before.

77. RAJAGIRI FORT, GINGEE, DISTRICT SOUTH ARCOT.—Dry stone masonry wall was raised at the breaches of the Fort in the south-western and southern sides.

78. AIRAVATHESWARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.—The undulating northern and north-western part of the flooring was reset after uprooting the grass with a proper gradient for the draining of the rain water. A portion of the cloister *mandapa* on the north-western corner was water-tightened by replacing the decayed terrace by brick jelly concrete in lime mortar.

79. BRIHADISHWARA TEMPLE, GANGAIKONDACHOLAPURAM, DISTRICT THANJAVUR.—With a view to exposing the original level of the wall, excavation was done outside the *prakara* wall.

80. SAMBHUNATHA TEMPLE, NEDUNGADU, DISTRICT THANJAVUR.—The decayed plaster in the Amman shrine and the *mahamandapa* was removed and replaced. Under pinning was carried out in the compound wall wherever necessary (pl. LIX). Teak wood doors were provided for the Ganesa and Subranmanyam shrines.

81. SIVA TEMPLE, NEDUNGADU, DISTRICT THANJAVUR.—Grill-gates were provided for the safety of bronze idols. The uneven brick flooring was removed and reset in the area between the *gopuram* and the main temple.

82. BRIHADISWARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—The flooring of the old kitchen was removed and reset with old stones over brick jelly concrete in lime

mortar. The flooring of the front *mandapa* of the Amman shrine was reset in brick jelly concrete after removing the uneven surface. In the *mahamandapa* of the temple, the patches of brick walls were removed and replaced by ashlar masonry work. The narrow steps at the entrance were widened and the original entrance opening was restored. The floorings of the platforms in the *mahamandapa* and *karna* gallery were plastered with cement mortar.

In the Nataraja *mandapa* of the temple, the stone flooring was completed by resetting the dislodged and uneven stone by laying them over with lime concrete.

The *vimana* of the temple was water-tightened by hand-ground lime mortar mixed with cement and plastered by a thin coat (pl. LX). The work is in progress.

The decayed flooring between Kuravanji and Nandi platforms was repaired by laying new bricks over brick jelly concrete and the joints were pointed. The basement of the pillars of the cloister of the temple was pointed. The floor of the Garuda shrine was also repaired.

83. SIVAGANAGA LITTLE FORT, THANJAVUR DISTRICT THANJAVUR.—Vegetation was removed inside the Fort. The rear wall of the Fort was supported by a retaining wall built in bricks. The revetment wall built earlier was pointed.

84. VALISWARA TEMPLE, VALIKANTAPURAM, DISTRICT THANJAVUR.—Grilled doors were fixed for the entrance *gopura* and the side of the *ardhamandapa* as well as the *mandapa* housing the bronzes as safety measure. The flooring around the *prakara* was reset. The original drainage was discovered and set in use by constructing retaining wall in the brick on either side and proper provisions were made to drain the water from inside the temple. All accretionary brick walls were removed and sky openings were provided with M.S. iron bars and wired-glasses.

SOUTH-EASTERN CIRCLE

Andhra Pradesh

85. MADHAVARAYASWAMY TEMPLE, GORANTLA, DISTRICT ANANTAPUR.—The steps of the ancient well inside the temple complex were exposed by removing the fallen debris. The retaining wall of the steps was rebuilt in the original pattern and restored with the salvaged stones.

86. VEERABHADRSWAMY TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—Re-flooring the *tolas* was completed and arrangement for the preparation of the temple-type wooden doors to the main and western entrance was made.

87. GROUP OF TEMPLES, PUSHPAGIRI, DISTRICT CUDDAPAH.—The sand deposits near the basement of Trikuteswara temple was cleared and basement exposed.

88. K.ODANDARAMASWAMY TEMPLE, VONTIMITTA, DISTRICT CUDDAPAH.—The thick coat of lime over the ornamental stone pillars of the *mukhamandapa* was scraped to expose the sculptured scroll work. The temple surroundings were levelled. The fallen walls of *yagnasala* were restored with cut stone work.

89. CHARMINAR, HYDERABAD CITY.—Iron fencing work was completed during the year including the inner railing of the proposed booking counter.

90. GOLKONDA FORT, HYDERABAD CITY.—The north-east corner of the quadrangle near the octagonal fountain of the mahal was cleared of the fallen debris and the interesting features of the basement were exposed.

91. KONDAREDDY BURJ, DISTRICT KURNOOL.—The lower terrace of the burj was water-tightened by relaying the tops with Cuddapah slabs and pointing, the masonry parapet is also provided.

92. MUKHALINGESWAR TEMPLE, MUKHALINGAM, DISTRICT SRIKAKULAM.—The sculptured panels of the *mukhadwara* were exposed to view after carefully removing a thick coat of lime plaster. The joints in the masonry were grouted with liquid cement and pointed with sunken mortar.

SOUTH-WESTERN CIRCLE

Goa

93. MAHADEV TEMPLE, TAMBDA SURLE, DISTRICT GOA.—The dislodged architectural members of *sikhara* have now been reset and missing ones provided. The whole roof has been rendered watertight. The pillars of the *sabhamandapa* have been reset in plumb condition.

94. BOM JESUS CHURCH, VELHA GOA.—The ugly-looking patches in the plastered wall surface of the interior of the hall were removed and painted in cream colour as per the original. Pointing of the open joints in the laterite walls on the rear was also executed.

95. CHAPEL OF ST. CATHERINE, VELHA GOA.—The open land around the chapel was fenced.

96. ST. FRANCIS ASSISSI CHURCH, VELHA GOA.—The wide longitudinal crack in the one-metre thick ceiling, caused during recent earthquake was closed by providing reinforcement at regular intervals, and the decayed concreted mortar in the affected areas has been renewed.

Maharashtra

97. MALLIKARJUNA TEMPLE, GHOTAN, DISTRICT AHMEDNAGAR.—Portions of original stone pavement and the buried plinth mouldings of the temple were exposed while clearing the large quantity of accumulated debris in the sunken courtyard.

98. AJANTA CAVES, AJANTA, DISTRICT AURANGABAD.—The fissures in the rock on the roof of Cave Nos. 1, 2, 16 and 17, permitting seepage of water have been traced and grouted with liquid cement mortar. Leakage has been stopped in most places.

The weathered rock-cut pillars in Cave Nos. 6 and 10 have been repaired according to the original fabric. The underpinning of rock-cut niches near Cave No. 9 was completed

and the masonry-built staircase was shifted to expose the sculptures on the rock-cut plinth of the caves. The masonry steps have been suitably plastered to match with the adjacent rock-cut facades.

99. AURANGABAD CAVES, AURANGABAD, DISTRICT AURANGABAD.—The coping for the parapet wall along the steps leading to caves in Group No. 1 has been provided and the undulations of weathered rock-cut floor of Gave No. 1 have been removed and concreted. The stone masonry pillars in Cave No. 9 were replaced by R.C.C. pillars to match with the original.

100. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—The decayed lime plaster on the exterior walls of the entrance gate and the main mausoleum was removed and fresh plaster in lime cement-mortar was provided. The decorative floral designs have also been restored as per the original.

101. ELLORA CAVES, ELLORA, DISTRICT AURANGABAD.—Removal of debris in front of Cave No. 32 has resulted in exposing to view the entire frontage of the cave. The leakage of water through fissures in the rock-cut ceiling has been stopped due to grouting and front wall has been repaired by plastering the weathered surface to match with the original.

The stone masonry pillars provided in the past in the entrance gateway of Cave Nos. 30 and 31 have been removed and damaged eves, door-jambs and lintels were restored in R.C.C., matching with the original. The weathered rock-cut floor of Cave No. 21 and the open courtyard in Cave No. 16 have been concreted and plastered in order to remove undulations, etc.

102. MANDAPESWAR CAVES, BORIVILI, BOMBAY.—Thick vegetation grown in the crevices of the roof and the debris, accumulated around this rock-cut temple, have been removed.

103. JOGESWARI CAVES, JOGESWARI, BOMBAY.—The inflow of storm and sullage water which had made entry into the temple impossible, has been stopped by reversing the slope of the concreted pathway.

104. KARLA CAVES, KARLA, DISTRICT PUNE.—The ornamental mouldings in Cave No. 8, which had developed cracks, were secured in position by providing necessary pins. The rubble stone masonry of the water cistern in front of the main cave was dismantled and reconstructed in cement mortar and given rock-cut effect to match with the original fabric.

105. ROCK-CUT TEMPLE KNOWN AS PATALESWAR CAVES, PUNE, DISTRICT PUNE.—The rock-cut circular Nandi pavilion which had collapsed owing to the damage suffered by the pillars was restored as per the original by providing two R.C.C. slabs and keeping the space in between them hollow in order to reduce the weight on the pillars which were also restored as per the original. The cracks in the remaining portions of the roof were grouted in liquid cement. The restored portions were made to match in colour and texture with the rest of the rock-cut temple. The parapet walls and rock-cut steps have been repaired and garden has been laid out in the open courtyard.

106. SHANWARWADA, PUNE, DISTRICT PUNE.—The damaged portions of the bastions of the citadel-wall were under-pinned and the leaky roof of 'Chimanbaug' inside the Wada was water-tightened by laying fresh concrete.

Mysore

107. ASHTOOR MONUMENT, BIDAR, DISTRIGT BIDAR.—The cracks in the dome of the tombs have been grouted after eradicating vegetations. The foot-paths have been improved by spreading *murum.*

108. BARID SHAHI MONUMENT, BIDAR, DISTRICT BIDAR.—The cracks in the dome have been grouted with liquid cement and the leakage of water has been completely stopped. The approach roads have been repaired by filling pot-holes, etc., and spreading *murum.*

109. MONUMENTS IN BIDAR FORT, BIDAR, DISTRICT BIDAR.—Certain portions of the stone walls of the citadel and of the moat near the first entrance gate were repaired by underpinning and also by restoring the missing portions. The ancient underground water supply system and the reservoirs of the Royal Palace area have been repaired and commissioned into service. With the restoration of water supply, it has been possible to lay out a garden in front of the main mosque. Replastering of the walls of the Royal Hammam was also completed. The leaky roof of the Sola Khamb Mosque has been water-tightened by laying fresh cement concrete.

110. AMBIGERGUDI, AIHOLE, DISTRICT BIJAPUR.—Two of the three independent shrines of this temple complex, buried up to the top of the plinth by debris and littered with manure pits which resulted in stagnation of water, were cleared by scientific excavation. The earlier temple, built of bricks, assignable to the Late Satavahana period, underlying the plinth of the Chalukyan (stone) temple, has been exposed in the excavation.

111. DURGA TEMPLE, AIHOLE, DISTRICT BIJAPUR.—The heavy mouldings and friezes of floral and geometric motifs carved on the high plinth of this apsidal temple which had suffered due to exfoliation were preserved by providing necessary binding medium and restoring the outlines of the simple mouldings in tinted mortar. Flag-stones have been provided around the basement to prevent erosion.

112. KUNTI TEMPLE COMPLEX, AIHOLE, DISTRICT BIJAPUR.—The damaged ancient stone platform built around the plinth of two of the temples (Nos. 1 and 2) in this complex as a safety measure against damage by flood and erosion, has been reset in position and the flag stones have been provided around all the three temples to prevent erosion.

113. LAD KHAN TEMPLE, AIHOLE, DISTRICT BIJAPUR.—After levelling the area, stone pavement has been provided to arrest erosion. The entire complex of Lad Khan, Narayana and Durga temples, covering an area of nearly 2 acres, has been landscaped and turfing has been done. The two ancient wells in the complex have been commissioned for ensuring water supply for gardening.

114. EARLY CHALUKYAN CAVES, BADAMI, DISTRICT BIJAPUR.—The weathered massive rock-cut pillars of Cave No. 1 were restored to their original shape and texture in concrete

mortar with reinforcement wherever necessary. Similar weathering action of the cliff surface above the sculpture of Nataraja has been arrested and cavities filled in mortar to match with adjacent rock surface.

115. FORT, BAD AMI, DISTRICT BIJAPUR.—The collapsed northern fortification wall has been repaired by using heavy stones as per the original.

116. PALLAVA INSCRIPTION, BAD AMI, DISTRICT BIJAPUR.—After levelling the area a a garden has been laid out.

117. JAINA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR.—Scientific debris clearance in the courtyard has brought to light the existence of an earlier brick temple, the plinth of which has several mouldings similar to those of the Early Chalukyan temples. Further exposition of the structure is in progress.

118. MALLIKARJUNA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR.—The damaged and missing perforated stone screens of the windows were replaced by new ones as per the original design.

119. PAPANATHA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR.—In the course of scientific debris clearance on the rear side of the temple, plinths of three sub-shrines buried under the debris have been exposed.

120. VIRUPAKSHA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR.—A major part of the enclosure wall which had suffered damage due to both exfoliation of stones and bulging of masonry, has now been reset in plumb. The entire open land around Mallikarjuna, Sangamesvar, Kasi Visvesvara and Galaganatha temples has been levelled and a garden has been laid out.

121. MAHADEVA TEMPLE, ITTAGI, DISTRICT RAICHUR.—All the dead lime-concrete over the terrace of the main temple was replaced by fresh cement concrete to stop the leakage of water. The dislodged carved stones of the *sikhar* a have been reset in position.

122. SUB-SHRINE NO. 3 NEAR MAHADEVA TEMPLE, ITTAGI, DISTRICT RAICHUR.—The restoration of the broken stone lintels, capitals and floor slabs with new ones is in progress.

123. PILLARED HALL NEAR MAHADEVA TEMPLE, ITTAGI, DISTRICT RAICHUR.—All the cracked roof slabs and lintels have been removed to be replaced with the new ones. The whole area has been dressed up after removing modern accretions and encroachments.

124. ASOKAN EDICT, MASKI, DISTRICT RAICHUR.—A wooden frame, having welded mesh, has been provided so as to control the entry of the visitors.

WESTERN CIRCLE

Gujarat

125. MUHAFIZ KHAN'S MOSQUE, AHMADABAD, DISTRICT AHMADABAD.—The damaged and missing merlons, parapet of minarets and stone grills of windows were replaced by new ones as per the original.

126. SAYYID USMAN'S MOSQUE AND TOMB, AHMADABAD, DISTRICT AHMADABAD.—Missing and broken kanguras and eaves were replaced with new ones and the badly damaged *mihrabs* were repaired as per the original carvings and settings. Missing lightning conductors were again provided. The south-western corner of the tomb, which was completely damaged right from its diamond design stones of the plinth to the top of the dome above, was redone entirely by providing base stones, pillars, capitals and lintels. The damaged dome was also completely repaired and plastered to match with the original pattern. Several damaged pillars were either replaced fully or partly in the original fashion without disturbing the superstructures. Similarly, a number of lintels, capital stones and arch stones were replaced or provided afresh wherever missing.

127. DOCKYARD, LOTHAL, DISTRICT AHMADABAD.—Desilting work as per .the Expert Committee's Report was taken up and a protective bund of desilted earth all round the dockyard was provided.

128. MAIN SHRINE IN DWARKADHISH GROUP OF TEMPLES, DWARKA, DISTRICT JAMNAGAR.—Newly carved and dressed stones as per original were provided in the eastern part of the *sikhara.* Similarly *kakshasana* on the ground floor was also repaired. Stone preservative was applied to the new stones.

129. PRADYUMANAJI TEMPLE IN DWARKADHISH GROUP OF TEMPLES, DWARKA, DISTRICT JAMNAGAR.—The damaged and weathered stones of the southern portion were taken out and new ones were provided as per the original. The work was done up to the *kakshasana* part of the *sabhamandapa.* All the new stones were treated with stone preservative.

130. PURUSHOTTAMJI TEMPLE IN DWARKADHISH GROUP OF TEMPLES, DWARKA, DISTRICT JAMNAGAR.—Damaged pillars and capitals were replaced with fresh dressed and carved ones as per the original.

131. TRIVIKRAMJI TEMPLE IN DWARKADHISH GROUP OF TEMPLES, DWARKA, DISTRICT JAMNAGAR.—Damaged and decayed stones in the eastern and southern sides of the plinth were replaced with new ones as per original pattern. Endike stone preservative was also applied.

132. PARASNATHJI TEMPLE, MIYANI, DISTRICT JUNAGARH.—The structure was rendered water-tight. Stone-flooring was provided inside the temple as per the original pattern. The compound wall of rubble masonry was repaired on the eastern, northern and western sides.

133. GALTESHWAR MAHADEO TEMPLE, SARNAL, DISTRICT KAIRA (KHERA).—The raised platform of the temple, damaged due to recent floods, was repaired and water-tightened on the eastern, southern and partly on the western sides by grouting and pointing. The damaged portion of stone pavement of the plinth was redone on cement concrete cushion.

134. JASMALNATHJI TEMPLE, ASODA, DISTRICT MAHESANA.—The damaged flooring of the platform of the shrine was partly repaired by laying stone-paving on cement concrete cushion.

135. MALAI MATA TEMPLE, PALODAR, DISTRICT MAHESANA.—The damaged and broken flooring of the raised platform was repaired.

136. RANI-KI-VAV, PATAN, DISTRICT MAHESANA.—Further desilting and debris clearance of Vav was taken up and few panels bearing elegant sculptures were exposed.

137. LAKULESHWAR MAHADEVA TEMPLE, PAVAGARH, DISTRICT PANCH MAHALS.—All the bulged and tilted ashlar masonry and other hanging architectural members of the structure were properly numbered and brought down and some of them were reset in the original position.

Rajasthan

138. SHIVA TEMPLE NO. 1, ARTHUNA, DISTRICT BANSWADA.—The loose architectural members of the raised plinth of the temple were reset and foundation of one of the shrines of *panchqyatana* in the south-east was strengthened.

139. SHIVA TEMPLE NO. 2, ARTHUNA, DISTRICT BANSWADA.—The dislodged architectural components of *sabhamandapa* were fixed in their original position in south-west corner.

140. ANNAPURNA AND BHANA MATA TEMPLES, FORT, CHITAURGARH, DISTRICT CHITAURGARH.—The undulated pavements were removed and a proper flooring of Manpura stones was provided.

141. BHAMASHAH'S HAVELI, FORT, CHITAURGARH, DISTRICT CHITAURGARH.—Pavement was done by providing Manpura stones on proper cement concrete cushion.

142. KALIKA MATA TEMPLE, FORT, CHITAURGARH, DISTRICT CHITAURGARH.—The undulating stone pavement was removed and reset by providing proper cement concrete cushion. The cracks in the *garbhagriha* and dome of the *sabhamandapa* were rendered water-tight.

143. TULJA BHAWANI TEMPLE, FORT, CHITAURGARH, DISTRICT CHITAURGARH.—The out of plumb rubble masonry was dismantled and rebuilt as per the original. Similarly the flooring and the parts of the dome were also reset.

144. MAHAKALESHWAR TEMPLE, MENAL, DISTRICT CHITAURGARH.—Out of plumb heavy ashlar stone masonry of north-west compound wall of the temple was dismantled after numbering each stone and reset in position. Some portion of the stone flooring inside the compound was also redone.

MONUMENTS MAINTAINED BY STATES

ANDHRA PRADESH

1. QUTUB SHAHI GARDENS AND TOMBS, GOLCONDA, DISTRICT HYDERABAD.—Mohd. Quli Qutub Shah's Tomb was repaired, and pathways in front of it were properly re-laid.

Eight sided cisterns and a central fountain was constructed and open gallery was repaired in Qutub Shahi Gardens. Loose arches in the gardens were repaired. Railing with concrete base was fixed at the Site Museum. A cafeteria was constructed on the site for the tourists.

2. KAKATIYAN TEMPLE, GODISALA, DISTRICT KARIMNAGAR.—Repairs to the temple were executed.

ASSAM

3. BASUDEV TEMPLE, KALABARI, DISTRICT DARRANG.—*Jangha, ratha* and the *sikhara* were renovated.

4. MAGHNOWA TEMPLE, PADMAPUR, DISTRICT DARRANG.—*Sikhara* and *mandapa* were partly repaired.

5. NA-MATH, KAMAKHYA, DISTRICT KAMRUP.—The temple was grouted properly and was repaired partly.

6. RUDRESWAR TEMPLE, NORTH GAUHATI, DISTRICT KAMRUP.—Trees and vegetations were cleared from the body of the temple and grouted properly.

7. PIYALI PHUKANOR DOL, GALAKI, DISTRICT SIBSAGAR.—The deep rooted trees were uprooted and vegetation was cleared from the body of the temple and then properly grouted. The dome of the temple was lime terraced. The area around the temple was fenced.

8. HARA GAURI TEMPLE, JAYSAGAR, DISTRICT SIBSAGAR.—The flat roof of the temple was lime terraced.

9. BARPATRA DOL, KALUGOAN, DISTRICT SIBSAGAR.—Trees and vegetations were cleared from the body of the temple and grouted properly.

10. NAMTI DEBI DOL, NAMTI, DISTRICT SIBSAGAR.—The *mandapa* of the temple was repaired and the area around the temple was fenced.

11. NAMTI SIVA TEMPLE, NAMTI, DISTRICT SIBSAGAR.—Lime terracing was done on the *sikhara* of the temple. The area around the temple was enclosed by barbed wire fencing.

12. GARAKHIA DOL, NAZIRA, DISTRICT SIBSAGAR.—The *sikhara* of the temple was repaired.

13. THAURA DOL, RAJMAI, DISTRICT SIBSAGAR.—All deep rooted trees and vegeta tion were cleared from the body of the temple and properly grouted. The *janghas* were repaired. The area around the temple was fenced.

14. RUDRASAGAR SIVA TEMPLE, RUDRASAGAR, DISTRICT SIBSAGAR.—The *sikhara* was repaired partly.

GUJARAT

Conservation work was done on the following monuments during the period under review :

15. DUTCH TOMB, KANKARIYA, DISTRICT AHMADABAD.

16. GROUP OF ANCIENT TEMPLES, GADH, DISTRICT BANAS KANTHA.

17. GROUP OF ANCIENT TEMPLES, KANTIVAS, DISTRICT BANAS KANTHA (pl. LXI).

18. GROUP OF ANCIENT TEMPLES, MAHUDI, DISTRICT BANAS KANTHA.

19. KADIYA DUNGAR (CAVE), JHANJHPOR, DISTRICT BHARUCH.

20. NAVALAKHA TEMPLE, GHUMLI, DISTRICT JAMNAGAR.

21. MODPAR GADH, MODPAR, DISTRICT JAMNAGAR.

22. MADHAVARAY'S HOUSE, PORBANDAR, DISTRICT JUNAGARH.

23. KASTURBA'S HOUSE, PORBANDAR, DISTRICT JUNAGARH.

24. NAGRA MOUND, PRABHAS PATAN, DISTRICT JUNAGARH.

25. SHITALA MATA'S TEMPLE, LINCH, DISTRICT MAHESANA.

26. GABLESHA'S STEP-WELL, PAVAGADH (CHAMPANER), DISTRICT PANCH MAHALS.

27. SHIVA AND JAIN MANDIR, ATARSUMBA, DISTRICT SABAR KANTHA.

28. SHIVAPANCHAYATAN MANDIR, ATARSUMBA, DISTRICT SABAR KANTHA.

29. STEP-WELL, IDAR, DISTRICT SABAR KANTHA.

30. MADHAV-VAV, VADHVAN, DISTRICT SURENDRANAGAR.

MAHARASHTRA

31. CAVES, PANHALE KAJI, DISTRICT RATNAGIRI.—Debris clearance work is in progress.

ORISSA

Conservation work was done on the following monuments during the period under review :

32. DADHIBAMANA TEMPLE, KOILO (ASURESWAR), DISTRICT CUTTACK.

33. TRILOCHANESWAR TEMPLE, KUNDESWAR, DISTRICT CUTTACK.
34. CENTRAL BLOCK, FORT, GANJAM, DISTRICT GANJAM.
35. AMARESWARA TEMPLE, AMARESWAR, DISTRICT PURI.
36. LAXMINARAYANA TEMPLE, CHAURASI, DISTRICT PURI.
37. CHANDI TEMPLE, KENDULI, DISTRICT PURI.
38. SOMANATH TEMPLE, VISHNUPUR, DISTRICT PURI.

RAJASTHAN

39. MAGDOOM SHAH'S TOMB, ALWAR.
40. MOOSI MAHARANI-KI-CHHATRI, ALWAR.
41. FATEH JUNG, GAMBAJ, ALWAR.
42. BHARMAL'S CHHATRI, AMBER.
43. DALARAM GARDENS, AMBER.
44. MUSEUM BUILDING, AMBER.
45. MANSINGH MAHAL, RAJ MAHAL PALACES, AMBER.
46. SHEESH MAHAL, RAJ MAHAL PALACES, AMBER.
47. MUSEUM BUILDING, BHARATPUR.
48. ASTRONOMICAL OBSERVATORY, JAIPUR.
49. CHHATRIS OF GAIRORE NEAR JAIPUR.
50. HAWA MAHAL, JAIPUR.
51. MAHARANI'S CHHATRIS NEAR JAIPUR.
52. MUSEUM BUILDING, JAIPUR.
53. NAHAR GARH FORT, JAIPUR.
54. JASAWANT THARA, JODHPUR.
55. AJIT SINGH'S DEWAL, MANDORE, JODHPUR.

56. DEVATAON-KI-SAL, MANDORE, JODHPUR.

57. PACH KUND, MANDORE, JODHPUR.

53. ZENANA BAGH, MANDORE, JODHPUR.

59. TEMPLE SITE AND STEP-WELL, OSIAN.

60. SUN TEMPLE, VARMAN, DISTRICT SIROHI.

61. RING-WELL, EXCAVATED SITE, AHAR, NEAR UDAIPUR.

62. VISHNU TEMPLE, ISWAL, NEAR UDAIPUR.

63. MUGHAL GATE, VIRATA NAGAR (BAIRAT).

WEST BENGAL

64. DADHIMADHAV TEMPLE, AMARAGURI, DISTRICT HOWRAH.—Overgrown trees have been uprooted, and the roof of the temple has been rendered water-tight. The walls have been replastered appropriately.

65. DURGA TEMPLE, PARA, DISTRICT PURULIA.—The overgrown vegetation was eradicated and the salt-affected bricks in the *sikhara* were replaced with new ones and the open joints of the brick work have been recess-pointed.

X. EXPEDITION OUTSIDE INDIA

PRESERVATION OF BUDDHIST SHRINES AT BAMIYAN, AFGHANISTAN

The Survey resumed *(1971-72,* pp. 125-26) the preservation work at the shrine of the Small Buddha at Bamiyan for the fourth season. The work, as in the previous season, was executed under the leadership of Shri R. Sengupta, while chemical preservation was directed by Dr B. B. Lai, assisted respectively by Sarvashri G. K. Rao and B. R. N. Sharma.

Due to earthquake-shocks in the past, several cracks had appeared in the curved ceiling of the niche of the Small Buddha. These cracks were earlier superficially filled in before the artists painted the figure of the Sun-god driven by quadriga. Before filling the cracks from below to the maximum possible depth, it was first ascertained that there was no leakage of water through them.

Having repaired the fissures in the staircase and reconditioning the nights of steps, the portions at the bottom were taken up. It was found that the original flight of steps were missing and the rubble masonry of the buttress wall filled the space. Therefore, the steps at the upper reaches and those at the bottom by which one ascends the staircase required to be joined. For this purpose, it was necessary to scoop out the masonry to provide a headway and construct concrete steps so that the original entrance could be restored for the use of visitors. The distance to be covered by the new work had to be measured and calculated for providing the required number of steps of a uniform size. The risers of the original steps were of various heights and a visitor found it difficult to negotiate steps with a higher rise.

Most crucial work was, however, to retain the severed portion of the rock which was so long supported by the buttress wall. The entire work had to be planned and preparations made for its systematic execution. The use of 'cut blocks' of rock in the support was suggested by a UNESCO consultant but masonry with cement-concrete plaster was to be used in preference to cut-blocks of rock, mainly because of the fact that by its strength, homogeneity and mass, it was considered to be more durable and suitable to match the irregular surface and contour of the rock. Necessary prepatory work was done to achieve this result in the next season.

During the period under review chemical treatment of the wall paintings in shrines around the main shrines of the Small Buddha was taken up. In Cells 1 to 9 on the ground floor near the feet of the Buddha and higher up in Caves 3 to 14 and in Cave 1 the work of chemical conservation was completed. Most of the continuing work of treatment of paintings in the main niche (pl. LXII) and some work in the higher up Cave 2 (pl. LXIII), was also executed. In several of these caves the paintings appear to have been covered with a layer of black glossy and smoked material (pl. LXIV). The local bush fuel, used by the cave-occupants, gives out a smoke rich in dense resinuous and oily materials. In the higher up, Cave 14, the stucco-figures (pl. LXV) which had an ornate plaster could be safely treated with dilute aqeous ammonia solution for removal of smoke. Stucco figures on which painted remains exist were cleaned with the help of organic solvents. The objects were consolidated with strong polyvinyl acetate solution.

Microscopic and micro-chemical examination of the paint and pigments preceded the steps towards their chemical conservation. The blue was mostly lapis lazuli and the red and yellow were ferruginuous ochres, in different stages of oxidation and hydration. The extensive work of filleting and filling of holes and cavities in the painted plaster and edging and fixing of its broken edges was continued. Large-scale fixing of the bulged out plaster back to the wall was also carried out.

XI. ARCHAEOLOGICAL CHEMISTRY[1]

TREATMENT OF MONUMENTS AND PAINTINGS

BIHAR

1. STUCCO PANELS IN MONASTERY AT NALANDA, DISTRICT PATNA.—Stucco panels in Temple No. 3 which have undergone decay through the agency of crystallization of soluble salts and seepage of water were subjected to chemical treatment. Gaps and cracks were filled with tinted resin composition to avoid their further widening.

Owing to the crystallization of soluble salt in Temple No. 2, all round the freize, many images had developed a tendency to peel off the surface. A part of the frieze was freed of these salts, and its surface was preserved with resin solution.

DELHI

2. MARBLE THRONE, DEWAN-I-AM, RED FORT, DELHI.—The fine *pietradura* floral decoration on this marble structure was subjected to elaborate chemical treatment involving the removal of the entire accretion of grease and decayed fatty substances. With a view to preserving the adhesive used in fixing the *pietradura* inlay, the use of ammonical substances were completely avoided. The work was executed with the help of organic solvents and some synthetic detergents.

3. GOLDEN PAINTINGS ON THE WOODEN CEILING OF DEWAN-I-KHAS, RED FORT, DELHI.—The accretion of dust, cobwebs, insect nests, wax, water marks and humus stains on the paintings was cleared as far as possible. Hydrogen peroxide had to be used on some locations to reduce the intensity of the colourful ingredients of the humus marks. The fabric on which the paintings are executed was fixed to the wooden ceiling wherever found loose.

4. MARBLE WORK, DEWAN-I-KHAS, RED FORT, DELHI.—The chemicals, like ammonia triethanolamine and detergents and a diluted solution of phosphoric acid, were employed for removing some resistant accretions on the creeper decoration of the plinth and marble surface.

5. MARBLE WORK, MOTI MASJID, RED FORT, DELHI.—A strongly adherent calcified percolation deposit, disfiguring the underside of the parapet of the exterior wall

[1] Information: 6, from the Director of Archaeology, Gujarat State; 18, 19, from the Director of Archaeology and Museums, Rajasthan State; 9 to 13 and 20 to 23, from the Deputy Superintending Archaeological Chemist of the Survey, Southern Range, Hyderabad, and the rest from the Deputy Superintending Archaeological Chemist of the Survey, Northern Range, Dehra Dun.

of the prayer hall, was cleared with the help of diluted phosphoric acid. The domes were chemically treated. The work in this mosque is completed.

GUJARAT

6. SHIVAPANCHAYATAN MANDIR, ATARSUMBA, DISTRICT SABAR KANTHA.—The monument was cleaned of moss, lichen, algae, etc. and treated with a fungicidal chemical. The surfaces were finally preserved with a coat of resinous solution.

HIMACHAL PRADESH

7. PAINTINGS IN DUWONG GUMPHA, TABO MONASTERY, SPITI VALLEY, DISTRICT LAHUL AND SPITI.—Chemical treatment of 40 sq. m of the ancient paintings, executed on the walls of the Gumpha, was completed. Large areas of paintings, done on a white lime stucco in earth colours and depicting scenes of Bodhisattva and Buddha (pl. LXVI), were disfigured with dust, mud and smoke from insense and oil burners. On several locations the mud support and arriccio have parted from the mud wall and have bulged out. Such loosened plaster was fixed back to the ground. The pigment layer was cleaned of accretion and water marks and was thereafter preserved.

MADHYA PRADESH

8. VISHWANATH TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR.----- Sculptures (pl. LXVII) and carvings on the northern side of the temple were taken up for clearance of vegetational growth, removal of coats of lime-wash and elimination of water soluble salts followed by fungicidal and preservative treatments.

MAHARASHTRA

9. CAVES, AJANTA, DISTRICT AURANGABAD.—Several experiments for the removal of chalkiness, allegatory, smoke, hard brown varnishes, etc., have been carried out in Cave No. 17 with great success. The general cleaning of the painted surfaces with the help of soft brushes have also been continued this year. Accretion of dust and cobwebs were removed from the paintings in Cave Nos. 19, 21, 22 and 26. Measuring the fluctuations of relative humidity and temperature was continued this year also, as it was observed that though the temperature fluctuated in the year 1971-72, the humidity remained constant due to the failure of the monsoon. The reading of the humidity was taken every day in the morning, afternoon and evening. A number of plaster and rock samples were estimated for the determination of hydroscopic contents in them with a view to studying the seepage or leakage of water coming to the painted surfaces. Experiments were carried out during the year with the help of insecticides to stop the damage to paintings by insects.

A large area of the thin painted plaster in Cave No. 10 has been strengthened with the help of 20% polyvinyl acetate and Plaster of Paris, etc. Experiments were also carried out with other consolidants like Movicol, Fevicol, etc., vis-a-vis with the plaster of Ajanta Caves. Minor consolidation of pigment and ground layers has been attended to in Cave Nos. 9, 19 and 26.

10. MAIN GATE, BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—The massive door plates of the entrance door, made of iron plates and copper nails, had rusted badly and with the interaction produced dirty brown spots on the surfaces. All these spots have been suitably removed and the rust washed off with the help of chemicals. The loose nails have been properly consolidated. Both the door leaves have been properly preserved after complete cleaning.

11. CAVES, ELLORA, DISTRICT AURANGABAD.—Several bulged painted plaster areas in Cave No. 33 in the north-east aisle have been fixed to the ground by injecting 20% polyvinyl acetate in toluene. Corners of such surfaces have been strengthened by edging with the help of Plaster of Paris tinted with suitable earth colours.

MYSORE

12. CHENNAKESAVA TEMPLE, BELUR, DISTRICT HASSAN.—The area which has been attended to during the year under review is the southern wall of the *garbhagriha,* western and southern walls *of navaranga,* Varaha panel on the lintel of southern entrance, a niche on southern wall of *garbhagriha* and small niches on the exterior of the southern entrance and the canopies near the southern entrance and the pillars in the interior of the temple.

The general cleaning of the area was carried out by dry brushing and detergents like teepol. The vegetational growth was removed with the help of ammonium hydroxide solution and mild organic acids like muriatic acid. Deoxidine in water was used to remove the reddish spots in the stones. The bracket figures were preserved with the help of wax polish and brushed to give a glossy appearance. The other treated area has been preserved with polyvinyl acetate in toluene.

13. KESAVA TEMPLE, SOMANATHAPUR, DISTRICT MYSORE.—The work was carried out on the northern tower including the elephant frieze portions and north-west corner connecting the north and central towers. Black moss and patches of lichen were cleaned with a mixture of teepol and ammonical water. To ward off the growth of moss, sodium pentachlorophenate in a 3% aqueous solution has been used. 3% polymethyl methocrylate in toluene has been used as a preservative coat.

ORISSA

14. DAKHYA PRAJAPATI TEMPLE, BANPUR, DISTRICT PURI.—This temple, encrusted with a heavy growth of tufts of lichen and thick moss, has been under chemical treatment for removal of accretions and for fungicidal treatment. Soluble crystallized salts like nitrates, sulphates and chlorides, causing exfoliation of the surface of the stone sculptures, were also drawn out with paper pulp capillary action as far as possible. The work has been completed.

15. PARBATI TEMPLE, BHUBANESWAR, DISTRICT PURI.—The harmful factors such as vegetational growth, lime wash, bird excreta and soluble crystalline salts which have contributed to the decay and disfigurement of sculptures in this large temple in the Lingraja temple-complex are being tackled prior to giving the fungicidal treatment.

16. SUN TEMPLE, KONARAK, DISTRICT PURI.—The work of chemical treatment of the sculptures and carvings for removal of vegetational accretion and soluble salts and

subsequent fungicidal and chemical treatment was carried over from the southern to the eastern face of the *jagmohana.* The vertical carved wall above the third row of *pidas* was given an ochre coat which is under observation for retention.

PUNJAB

17. TOMB OF PUPIL MUSICIAN, NAKODAR, DISTRICT JULLUNDUR.—The polychrome decorative enamel tiles and the paintings which embellish the exterior of this tomb remained under chemical treatment. The tiles and paintings are by and large both obscured by a growth of fluffy moss. The growth on the tiles was softened with the help of diluted ammonia solution and that on the paintings with the help of turpentine. The work is likely to be completed next year.

RAJASTHAN

18. AMBER PALACES, AMBER, DISTRICT JAIPUR.—Wall paintings inside *bhojan shala* of the Palaces were chemically cleaned, restored and preserved.

19. MAN SINGH'S PALACES, AMBER, DISTRICT JAIPUR.—Layers of whitewash which had been applied on the three panels of painting on the walls were scientifically removed and the paintings exposed. Paintings on three wooden doors were chemically conserved.

TAMIL NADU

20. KAILASANATHA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.—The re-treatment work of already treated paintings in this temple was taken up at various places. Some areas of the temple were taken up for the removal of lime plaster layers over the paintings for proper preservation. The work involved: consolidation of loose edges of paintings; removal of lime wash by mechanical or chemical cleaning; chemical treatment for brightening the exposed paintings and preservation of the treated paintings.

Chemical cleaning of the existing paintings was carried out from Cell No. 1 to Cell No. 21 and the north wall between Cell Nos. 26 and 27. After gentle dry brushing, to remove dirt, dust, cob-webs, the old preservative coating was removed using toluene. Then the paintings were cleaned by using n-butyl alcohol, methyl ethyl ketone with the diluent of turpentine. The treated areas were then preserved using 3% polyvinyl acetate in toluene.

In Cell No. 1, double layer paintings were exposed on the north-south walls. Between Cell Nos. 1 and 2 single layer painting in one portion and a double layer painting in another area were brought out on the northern wall. On the eastern wall, a double layer painting was brought to light.

In Cell No. 2, on the southern wall, old plaster with original colours and on the eastern wall some painted areas were exposed.

Between Cell Nos. 2 and 3, after cleaning the lime plaster on the north and south walls, paintings have been exposed in two layers.

Between Cell Nos. 27 and 28, on the southern wall, a three-layer painting in one portion and a two-layer painting in another portion were brought out.

In Cell No. 40, beautiful paintings have been exposed after the removal of thick coats of lime wash on the western wall.

In Cell No. 41, a few patches of paintings were exposed from the covering of lime layers.

All these exposed paintings have been chemically cleaned to remove all adhering accretions and fine layers of lime. After cleaning, they have been preserved with a preservative coat. The work of consolidation of the plaster and painted surface has also been completed on exposed paintings.

21. ARJUNA'S PENANCE, MAHABALIPURAM, DISTRICT CHINGLEPUT.—After the removal of moss growth in some areas in the panel, 1 % aqueous solution of sodium penta chlorophenate was applied and finally preserved with 3.5% solution of polyvinyl acetate emulsion in water.

22. FIVE RATHAS, MAHABALIPURAM, DISTRICT CHINGLEPUT.—The work in the year under review involved the application of fungicide and Sodium Hexachlorophenate on the Arjuna, Draupadi and Nakula Sahadeva Rathas and also on the bull, lion and elephant monoliths. A coat of 3.5% of aqueous solution of polyvinyl acetate emulsion has been applied on the surfaces as preservative.

23. BRIHADISWARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—The sculptures and inscriptions on the western and northern dallans, covered with coats of lime washes, colour stains and black and grey patches of moss and lichen, were chemically treated. An aqueous solution of liquor ammonia and teepol and organic acids were used for the removal of accretions. The red stains were removed with the help of deoxidine.

UTTAR PRADESH

24. WALL-PAINTINGS IN KHWABAGH, FATEHPUR, DISTRICT AGRA.—Chemical treatment of paintings on the walls of the reading room in the upper storey of this structure is in progress. The work includes removal, wherever necessary, (i) of old decayed preservative coat applied earlier, (ii) deposit of dust and (iii) stains and water marks. Soluble salts which had percolated from the roof and had rendered the stone wall friable at some locations by crystallization and hydration would also be drawn out as far as possible. Organic solvents like, toluene, cellosolve, triethanolamine, etc., are being used for chemical treatment.

25. EXCAVATED ASVAMEDHA SITE, KALSI, DISTRICT DEHRA DUN.—Bricks covered with a growth of moss were subjected to chemical treatment and cleaning with the aid of soft brushes. Mercuric chloride solution was applied as a fungicide and polyvinyl acetate resin solution as a consolidant.

26. PAINTINGS IN RANI LAKSHMI BAI'S PALACE, JHANSI, DISTRICT JHANSI.—The paintings on the walls and terraced stairway of this Palace leading from the ground floor to the Rani's Retiring Room, which were disfigured due to old varnish, streaks of lime wash, dust, fatty substances, cobwebs and insects, were chemically treated. The flaking pigment layer was also fixed to the priming. Removal of the old varnish from the door leaves and frames exposed earlier decoration in bright red colour.

WEST BENGAL

27. TERRACOTTA CARVINGS IN MADAN MOHAN TEMPLE, BISHNUPUR, DISTRICT BANKURA.—The exquisite terracotta reliefs (pl. LXVIII) on the exterior of this temple were found to be overlaid with moss, lichen, lime and ochre washes and are at places also subject to the flaking effect of soluble salt crystallization. The *sikhara* and vertical walls of the temple were chemically treated.

28. BASUDEO TEMPLE, BANSBARIA, DISTRICT HOOGHLY.—The *churas* and walls of the temple were taken up for chemical treatment for removal of moss and lichen, lime wash and other accretion which had disfigured the ornate terracotta relief work. Ammonia, lissapols and triethanolamine have been used in the work.

TREATMENT OF EXCAVATED OBJECTS AND MUSEUM EXHIBITS

The following objects, sent by various agencies were chemically treated: seventy silver coins from the collection of Shri Shiva, Artist, Ahmadabad, three hundred and seventy coins from Dholka, District Ahmadabad, fifty silver coins from Dr Hariprasad Shastri, Director, B. J. Research Institute, Ahmadabad, sculptures like Bhairava, *Simha vyal Manushya vyal* etc., found at Central Telegraph Compound, Bhadra, Ahmadabad, partly damaged image of Vishnu from the village Unchi Dhanal, Taluk Khedbrahma, District Sabar Kantha, another image of Vishnu from the collection of Shri Nirubhai Desai, Ahmadabad.[1]

Six miniature paintings in the Government Central Museum, Jaipur, were chemically treated, and the entire textile section of the museum was provided with fungicide treatment.[2]

One thousand three hundred and eleven antiquities comprising various types of paintings and metallic objects (copper and iron antiquities) were chemically treated and preserved. These included four Bijapur Museum paintings, seven hundred and fifty copper coins from Hauz Khas, one hundred twenty-one iron and copper objects obtained from excavation at Purana Qila and remaining four hundred and thirty-six coins sent by the Epigraphy Branch of the Survey. One canvas painting 'The Fall of Srirangapatna' by Robert Ker Porter (size: 2.70 X 0.91 m.) and fourteen wooden sculptures of Halebid Museum were also given chemical treatment.[3]

Fifty silver coins and some copper coins from Kondapur Museum and fifty unstamped copper coins from the Site Museum at Srirangapatna were chemically preserved.[4]

Three stone sculptures of Vishnu, Parvati and Rishavanatha accompanied by Jaina Tirthankaras, recovered from Burdwan and Murshidabad Districts, were chemically treated and preserved.

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1 Information from the Director of Archaeology, Gujarat State.

2 Information from the Director of Archaeology and Museums, Rajasthan State.

3 Information from the Chief Archaeological Chemist of the Survey.

4 Information from the Deputy Superintending Archaeological Chemist of the Survey, Southern Region, Hyderabad.

5 Information from the Director of Archaeology, West Bengal State.

More than hundred museum objects were treated and preserved, and paper pulp treatment was given to seventy sculptures at Archaeological Museum, Hoshiarpur. Two Victoria Marble Statues were also preserved chemically at Patiala. A good number of coins were also treated and preserved.[1]

ANALYSES AND RESEARCH

GEOCHRONOLOGICAL STUDIES.—Having completed the chemical and the mechanical analyses, and the heavy mineral studies of the soil specimens from Purana Qila, New Delhi, a report on the chronology of this site was finalized. The bones collected from this site were treated chemically for the estimation of fluorine content in them for the purposes of comparative dating. Some soil specimens were collected from another trench for the geochronological studies, some of which were analysed chemically during the year under review.[2]

CHEMICAL ANALYSIS.—During the year under report, sixteen specimens comprising metal, soils and stones, were examined and the work of preparation of reports was taken up.[3]

A number of micro-cross sections of pigments and plaster samples from Ajanta, Ellora, Thanjavur, have been prepared with a view to studying the nature of materials and encrustations and to finding out methods of their preservation.

Analysis of the chalky encrustation on the paintings at Ajanta has been carried out with a view to knowing the reasons of excessive blanching on the paintings.[4]

1 Information from the Director of Archaeology and Museums, Punjab

2StateInformation from the Chief Archaeological Chemist of the Survey.

3Information from the Chief Archaeological Chemist of the Survey.

4Information from the Deputy Superintending Archaeological Chemist of the Survey, Southern Region, Hyderabad.

XII. ARCHAEOLOGICAL GARDENS[1]

ANDHRA PRADESH

1. QUTUB SHAHI TOMB, GOLCONDA.—Cana, roses and bougain villeas of different hues and colours were planted following the contour of the arches of the basement of Mohammad Quli Qutub Shahi Tomb and the mortuary. Several trees were cut down to open a fine view of the Tomb. More than five hundred fruit trees were planted. Water supply was improved by installing electric pump.

2. HILL TOP GARDENS, NAGARJUNAKONDA, DISTRICT GUNTUR.—Efforts were made to keep the premises presentable. Site clearance in the enclosure continued during the year under review.

GOA

3. CHURCH GARDENS, VELHA GOA.—The shallow well behind St. Cajathan Church was enlarged to hold larger quantity of water for the gardens. Calcutta *dhoob* was planted in three plots opposite Se-Cathedral. A new small garden was laid out around St. Catherine Church. Efforts were made to revive the defunct fountains by providing new jets and by taking water connection from P.W.D.

MAHARASHTRA

4. BIBI-KA-MAQJBARA, DISTRICT AURANGABAD.—The most severe drought experienced during the living memory made the maintanence of the garden an uphill task, as even the recent bore wells went dry due to the drying up of the underground sources. However, best efforts were made to save as many plants as possible.

MYSORE

5. ALI II ROUZA GARDEN, DISTRICT BIJAPUR.—No new plantation work was taken up due to severe drought in the region. Layout of a net work of pipe lines was done for proper distribution of water to all the sections of the garden.

6. ARQUILLA GARDEN, DISTRICT BIJAPUR.—The casualties in the palm avenue and the shrubberies, due to severe drought were filled up. The *Khandak,* which is the main source of water for the garden, was completely desilted and shore line was rebuilt. Some of the old tamarind trees which had died were removed.

[1] Information: 1, from the Director of Archaeology, Andhra Pradesh; 14, 15, from the Director of Archaeology and Museums, Punjab State; 16-18, from the Director of Archaeology, Rajasthan State, and the rest from the Chief Horticulturist of the Survey.

7. ASAR MAHAL GARDEN, DISTRICT BIJAPUR.—Slight changes were effected to give a better look to the garden. Though the water supply was meagre, due to severe drought, shrubbery was replanted and some trees were planted.

8. GAGAN MAHAL GARDEN, DISTRICT BIJAPUR.—Installation of an additional pump set was completed. Laying out a net work of pipe lines was also initiated. The entire garden was returfed with Calcutta *dhoob* grass. The store and cabin rooms were improved.

9. GOLGUMBAD GARDEN, DISTRICT BIJAPUR.—Water supply to the garden was found to be very meagre due to severe drought in the region. Accordingly, efforts were made to save the plantation and to improve the plant collections. Taking advantage of the drought, some of the lawns around the monument were taken for returfing. Preparatory cultivation was, therefore, completed. Bijapur section as a whole won a number of prizes in the horitcultural show.

10. JOD GUMBAD GARDEN, DISTRICT BIJAPUR.—Alignment of pump set was changed to improve its efficiency. Direct pumping was restored to, as the overhead tank started leaking. Some changes in the layout were carried out.

11. HOYSALESWARA TEMPLE GARDEN, HALEBID, DISTRICT HASSAN.—Renovation of the garden was undertaken. The shrubberies were revived. Grass was replanted. Levelling in the topography was carried out. The car parking area was enlarged and improved. Fresh hedges were planted.

12. DARIA-DOWLAT-BAGH, SRIRANGAPATNA, DISTRICT MANDYA.—Laying out a net work of pipe lines was completed. Reorientation of the garden on the Mughal style is in progress. The work involved massive movement of soil from one side to the other. An intensive ornamental garden of about 10-12 acres was formed by planting Calcutta *dhoob*. A larger number of propogated plants are being kept ready for planting with the completion of the reorientation.

13. GUMBAZ GARDEN, SRIRANGAPATNA, DISTRICT MANDYA.—Reorientation of the garden on the Mughal style was taken up and progress has been achieved in producing a proper level of the ground. Strengthening of the fencing has been undertaken in a phased programme.

PUNJAB

14. DHOLBAHA, DISTRICT HOSHIARPUR.—The area around the protected sites was beautified with flower beds and decorative plants.

15. SHEESH MAHAL, PATIALA.—The complex was cleared of bushes, shrubs and trees and beautified with grass lawns, flower beds and decorative plants.

RAJASTHAN

16. CHAMAN BAGICHI, BHARATPUR MUSEUM, AJMER.—Efforts were made to beautify the garden.

17. RAJPUTANA MUSEUM, AKBAR'S FORT, AJMER.—Efforts were made to beautify the garden.

18. PALACE AT AJMER, JALEB CHOWK, DISTRICT JAIPUR.—The garden was developed on the old pattern, represented by the Dalaram Garden. The gardens inside the Palaces and Jantar Mantar were properly maintained.

UTTAR PRADESH

19. AGRA FORT (OUTER) GARDEN, DISTRICT AGRA.—Barbed wire fencing was provided on the drain side of the area to check the entry of stray cattle.

20. AKBAR'S TOMB GARDEN (SIKANDRA), DISTRICT AGRA.—Under the 'Grow More Food' campaign, about 17 acres of land was sowed with gram and barley. A few ugly looking weed infected lawns were also returfed with good quality of grass. The shrubbery on the Dak Bungalow side of the main platform was replaced with new varieties.

21. ETMAD-UD-DAULLA GARDEN, DISTRICT AGRA.—Two old looking plots of lawns were returfed. The vineyard at this garden was renovated.

22. KHAN-E-ALAM NURSERY, DISTRICT AGRA.—The irrigation system in the nursery was improved by providing pucca channel at Upper Khan-e-Alam. Repairs to the pot house was undertaken for providing shelter to the delicate shade loving plants. Rosarium at lower Khan-e-Alam was renovated and new varieties were planted.

23. RAMBAGH GARDEN, AGRA.—Many old fruit trees which had lost the capacity of yielding good fruits were renovated.

24. ROMAN CATHOLIC CEMETERY GARDEN, AGRA.—The garden which was ruined by the falling of the boundary wall, was relaid after repairing the wall.

25. RAMABHAR STUPA, KUSHINAGAR, DISTRICT DEORIA.—The work of boring of a well was completed.

26. RESIDENCY GARDEN, LUCKNOW.—Plots of lawn near Model Room at Residency garden were returfed.

. PUBLICATIONS

PUBLICATIONS OF THE SURVEY

1. BROCHURE.—A brochure on *Fatehpur Sikri* by W. H. Siddiqi was brought out.

2. INDIAN ARCHAEOLOGY—A REVIEW.—Number for 1960-61 was published.

3. GUIDE BOOKS.—Guides to *Amaravati* by H. Sarkar and S. P. Nainar, *Fatehpur Sikri* By S. A. A. Rizvi, *Mahabalipuram* by C. Sivaramamurti and *Nagarjunakonda* by H. Sarkar and B. N. Misra were published.

4. PICTURE POSTCARDS.—Picture postcards sets of Amaravati, Dig, Fatehpur Sikri, Khajuraho and Lucknow were printed.

5. COLOUR PICTURE POSTCARDS.—Picture postcards sets in colour of Cochin and Ellora were printed.

OTHER PUBLICATIONS

ANDHRA PRADESH.—The Director of Archaeology and Museums, has published *Lepakshi Kala Mandapam, Kakatiya Sculptures, Select Epigraphs of Andhra Pradesh, Corpus of Telangana Inscriptions, Andhra Sculptures, Indus People began to Speak (Andhra Historical Research Society Journal,* Vol. 33—part I). The printing of History of Deccan, Earlier Chalukyan Copper Plates, Warangal District inscriptions, Epigraphica Andrica, Vol. II and Perur inscriptions, are under progress. *Vishnukundins, Gold and Silver Coins of Sultans of Delhi, Monograph on Bronzes, Andhra Historical Research Society Journal,* Vol. 33, parts 2-4 and *Andhra Historical Research Society Journal,* Volume 34, part 4 were sent to the press for printing.

BIHAR.—The Curator, Chandradhari Museum, Darbhanga, has taken up the revision of the coin catalogue of the Museum; *Pranav Rahasya* and *Cultural history* of *Mithala* by Bhagirath Jha are under revision for publication.

GUJARAT.—The Director of Archaeology has published the *Annual Report of the Department of Archaeology, Gujarat State* 1969-70 (English), 1970-71 (Gujarati and English), *Polo-Na-Prachin-Mandiro* (booklet-Gujarati), *Navalakha-Mandir,* Gumli (Folder-Gujarati, Hindi and English). *Smt. Kasturiba's House* (booklet-Gujarati and English) and *Birth place of Mahatma Gandhiji and Gandhi Smaraka Kirti Mandir* (booklet-Gujarati and English) are in press for printing.

MADHYA PRADESH.—The Head of the Department of Ancient Indian History, Culture and Archaeology, University of Sagar, has published *Bulletin of Ancient Indian History* and *Archaeology and Marg—Madhya Pradesh Sculpture number.*

MAHARASHTRA.—The Director of Archives and Archaeology has published the *Guide book to the Kolhapur Museum* in Marathi. *Catalogue of coins of the Moghal Emperors* in the Central Museum, Nagpur, Part II is sent to the press for printing.

ORISSA.—The Assistant Director, Cultural Affairs has published *Alphabetical Catalogue Oriya Manuscripts, Descriptive Catalogue of Sanskrit manuscripts,* Vol. VII., *History of Ganga,* Vol. II., *Orissa Historical Research Journal* and *Inscriptions of Oriya* are in the press for printing.

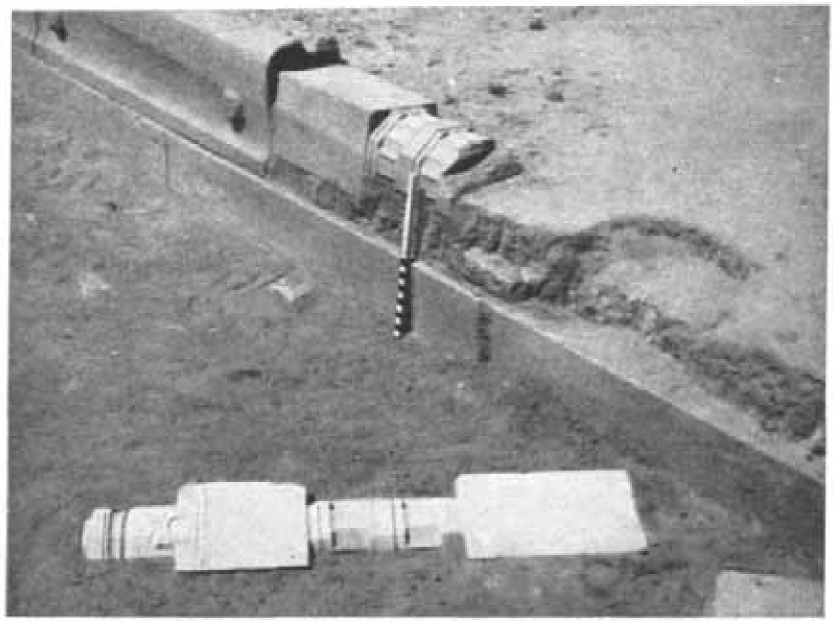
RAJASTHAN.—The Director of Archaeology and Museum has published a catalogue dealing with Mughal paintings and manuscripts. The *Researcher* (Vol. XII-XIII), *Tug Tugon men Rajasthan* and *Sikkon Ke Madhyam Se* are sent to press for printing.



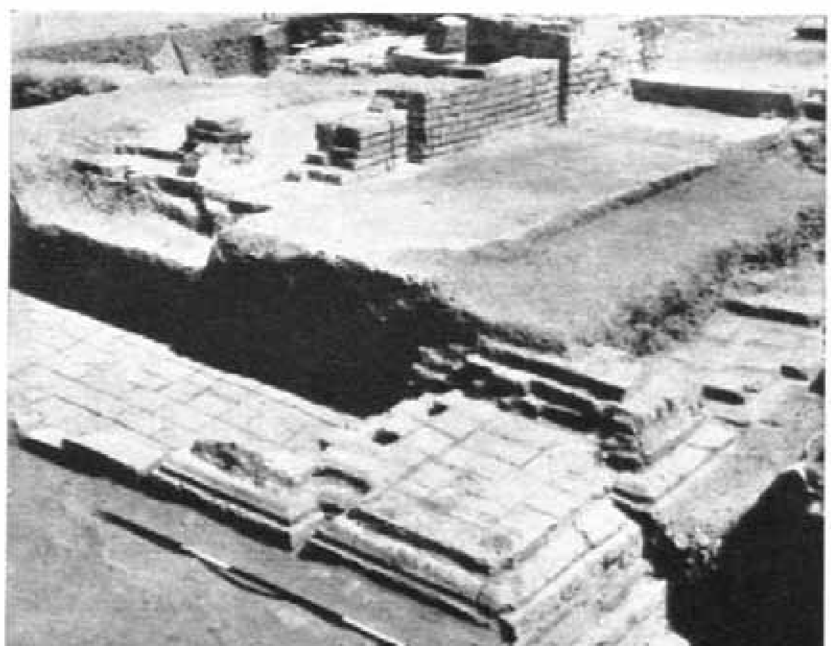
A. *Golconda : warehouse.* *See p. 1*



B. *Peddabankur : basement of an elliptical structure.* *See p. 2*



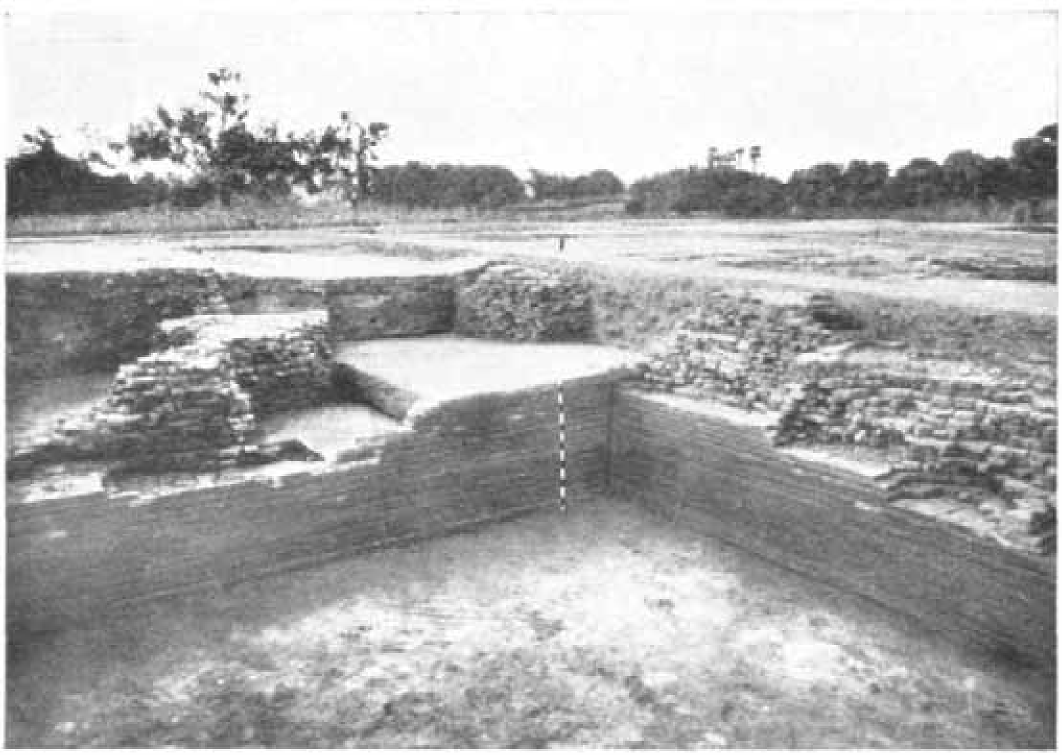
A. *Gollathagudi : plinth of Temple 2.* *See p. 2*



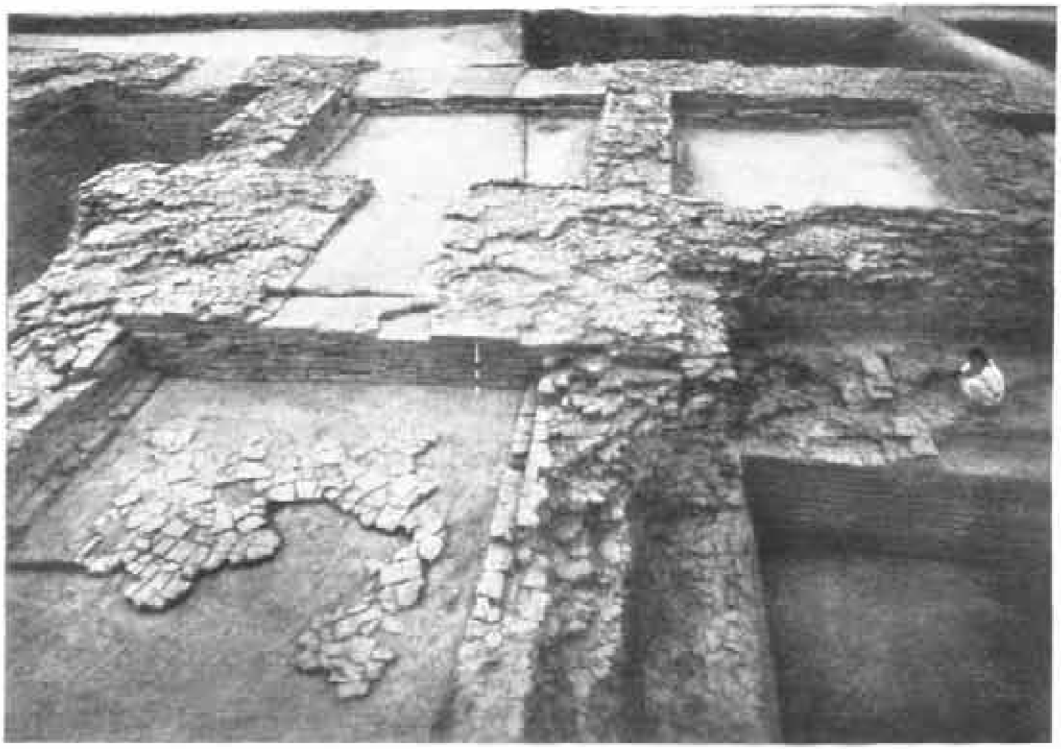
B. *Gollathagudi : Temple 3 with garbhagriha.* *See p. 2*



A. *Antichak : the four chambers outside the outer wall. See p. 4*



B. *Antichak : rectangular structure projecting from the outer wall. See p. 4*



A. *Antichak : rectangular structure with monastic cell in the background. See p.4*



B. *Antichak : circular structure at the corner of the outer wall. See p. 4*



Antichak : northern gateway, close view. *See p. 4*



A. *Antichak : northern gateway, general view.* *See p. 4*



B. *Antichak : monastic cells with a common verandah.* *See p. 4*



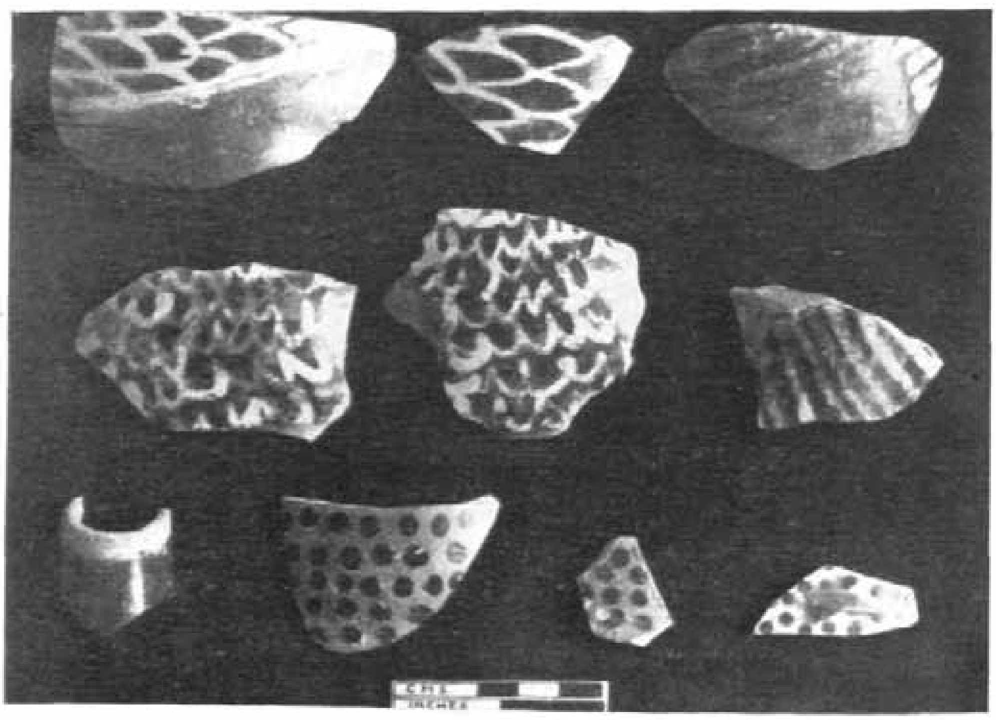
A. *Antichak : sculpture of Jambhala in situ. See p. 4*



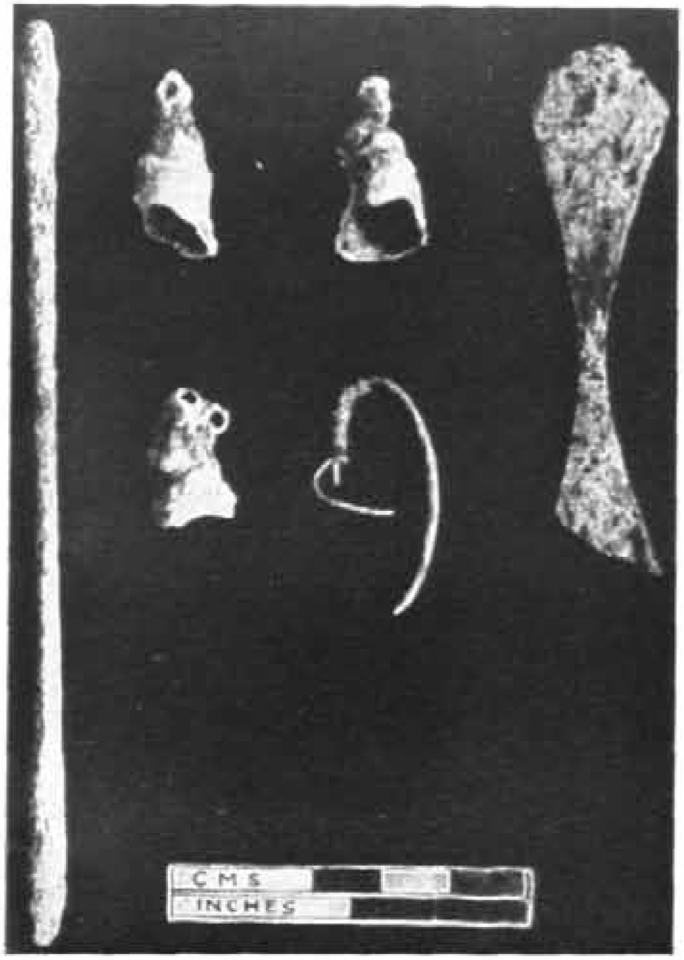
B. *Antichak : terracotta sealing. See p. 4*



A. *Champa : terracotta objects.* *See p. 6*



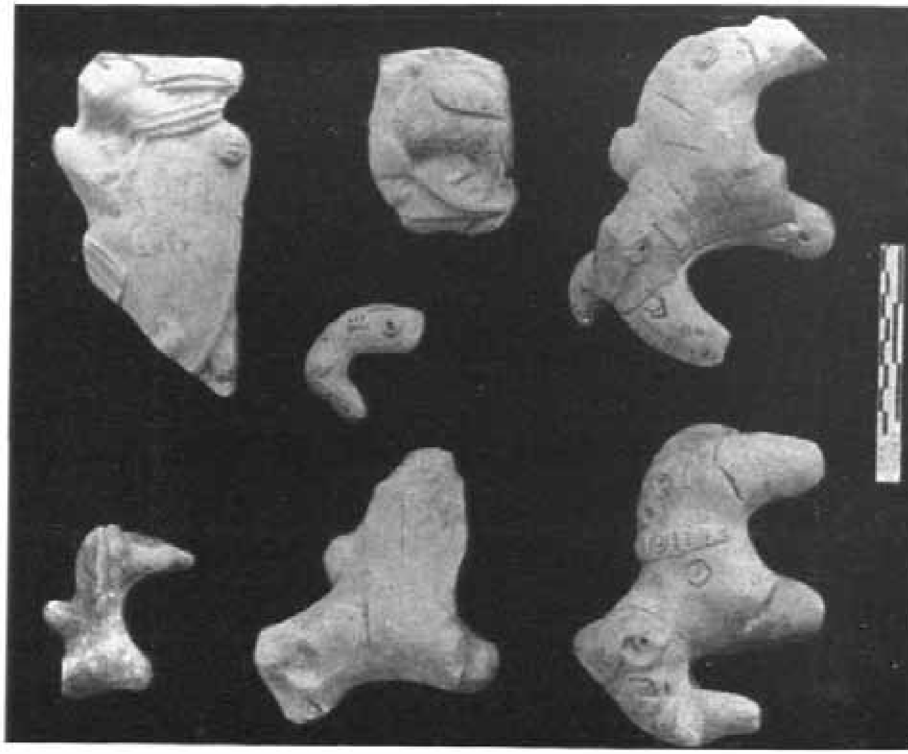
B. *Champa : sherds of painted Northern Black Polished Ware.* *See p. 7*



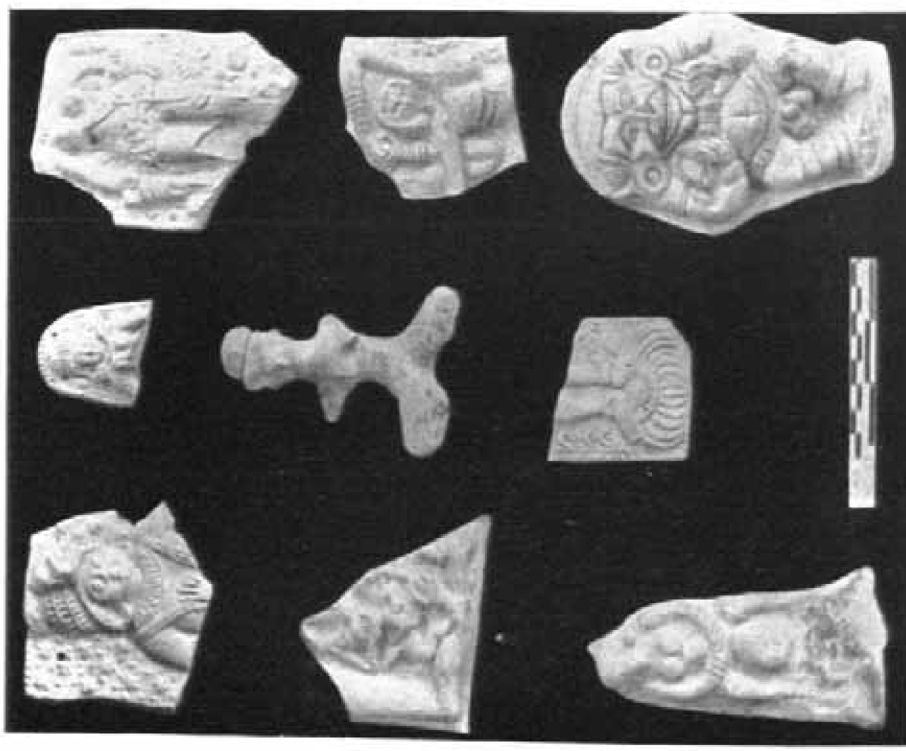
A. *Champa : copper objects.* *See p. 6*



B. *Champa : terracotta female figurines.* *See p. 7*



B. *Balirajgarh : terracotta animal figurines, Period I.* *See p. 7*



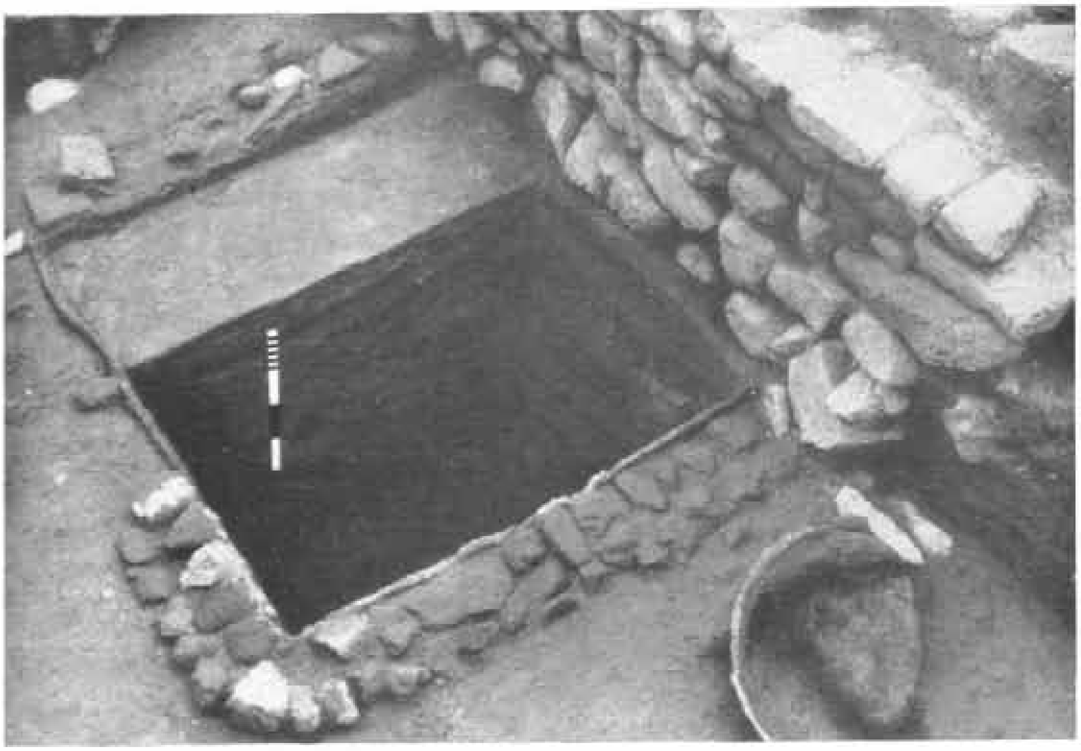
A. *Balirajgarh : terracotta human figurines, Period I.* *See p. 7*



A. *Chirand : bone objects, Period I. See p. 8*



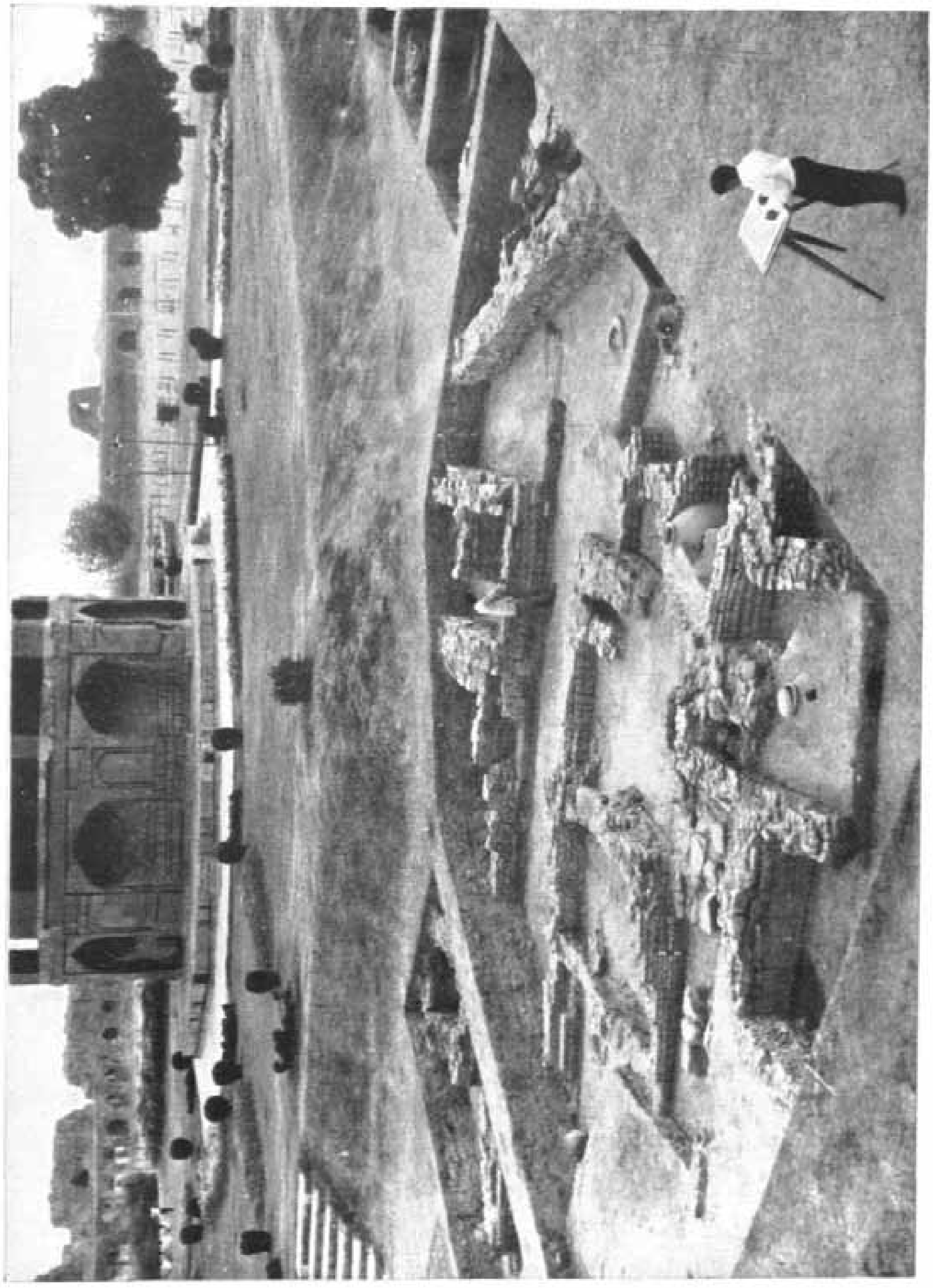
B. *Chirand : terracotta humped bull, Period I. See p. 8*



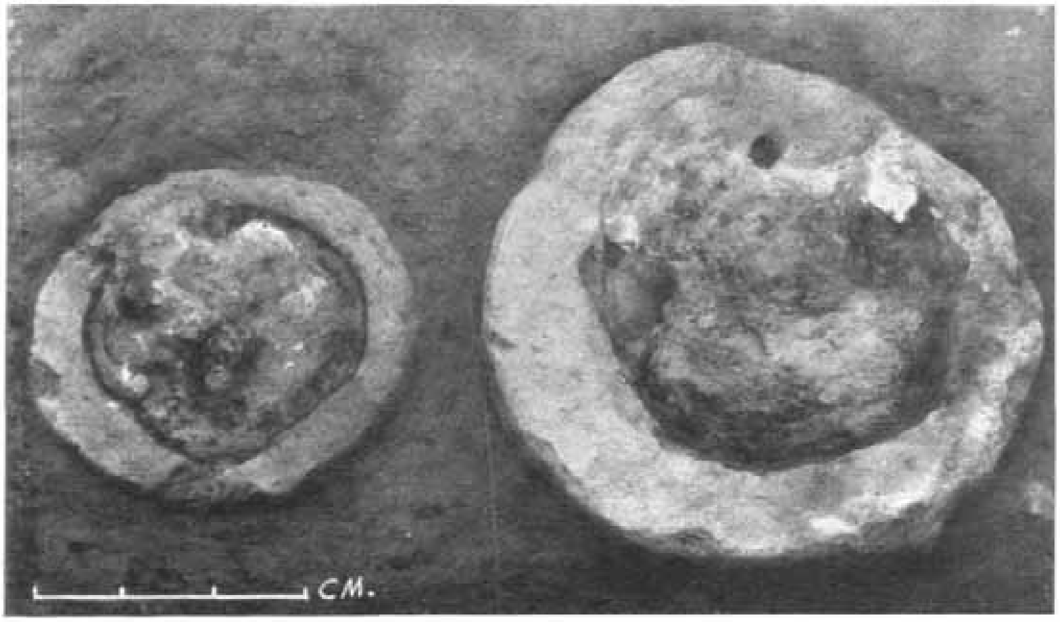
A. *Purana Qila, Delhi : trough, plastered internally with lime, Early Phase, Mughal Period.* *See p.* 9



B. *Purana Qila, Delhi : decorated gold leaf, Early Phase, Mughal Period.* *See p.* 9



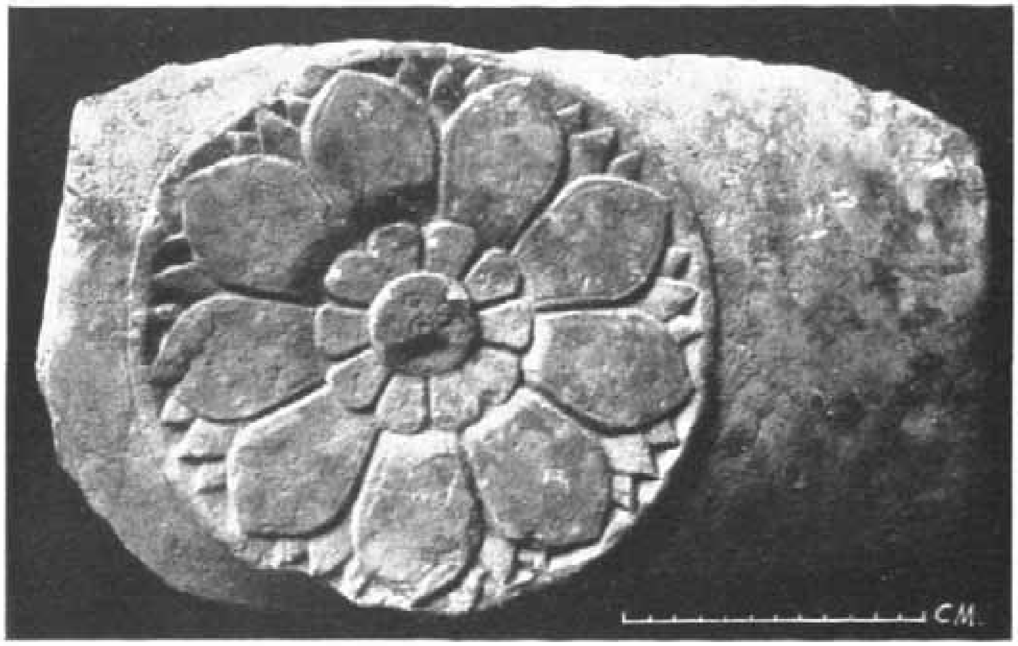
Purana Qila, Delhi : structural remains of the Mughal Period. *See p. 9*



A. *Purana Qila, Delhi : ovens.* *See p. 9*



B. *Purana Qila, Delhi : structures of Phases I and II of Mughal Period.* *See p. 9*



A. *Purana Qila, Delhi : fragment of stone cross-bar, Mughal Period.* *See p. 9*



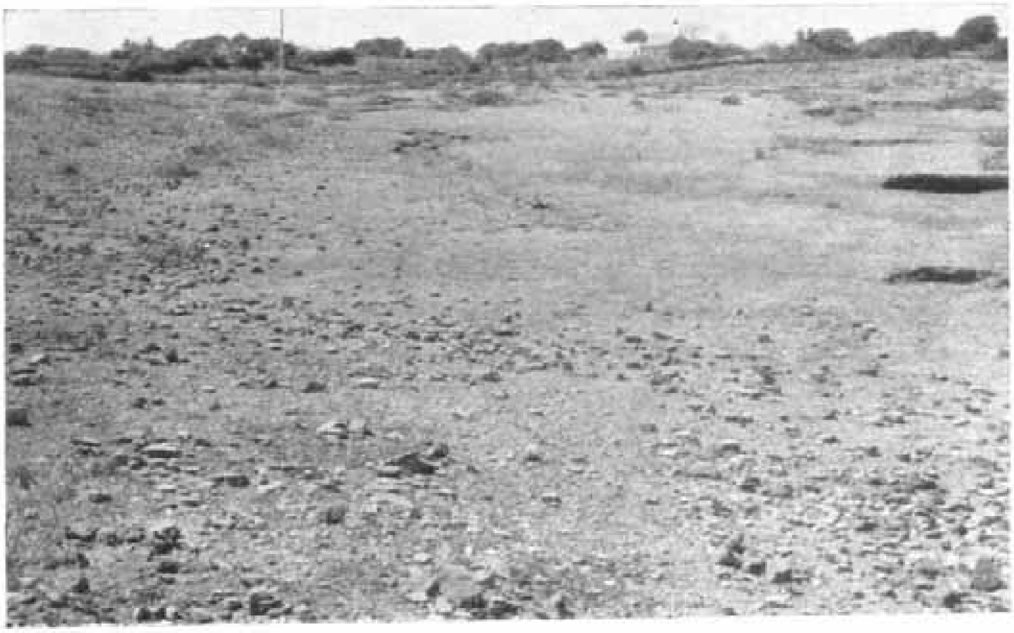
B. *Purana Qila, Delhi : storage jars inside the room, Mughal Period.* *See p. 9*



B. *Purana Qila, Delhi : terracotta human figurine, Rajput Period. See p. 9*



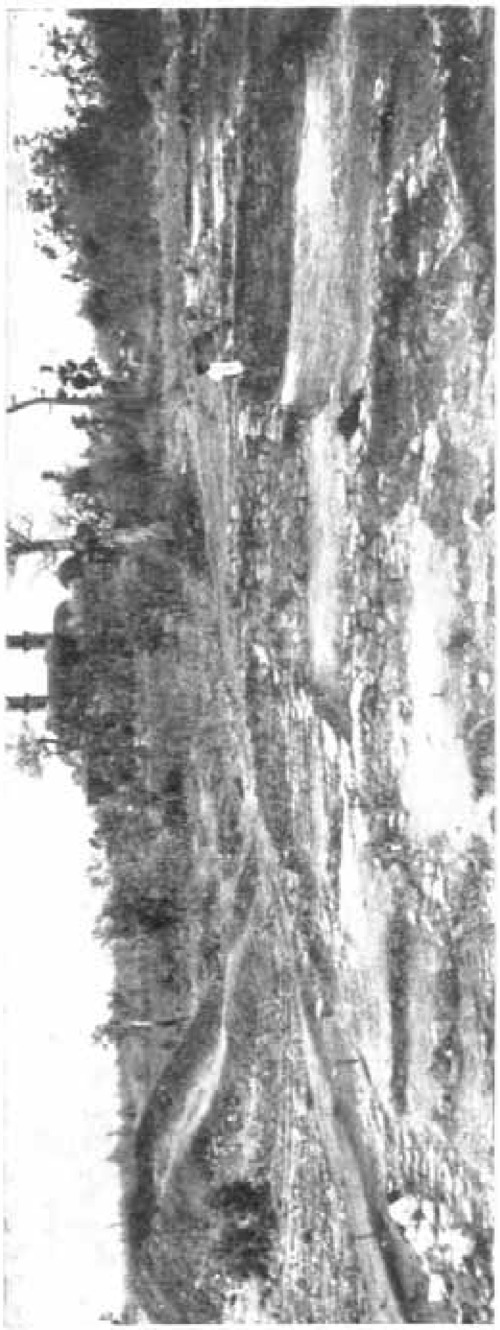
A. *Purana Qila, Delhi : a decorated pot with a knobbed base and loop handle, Mughal Period. See p. 9*



A. *Khambhodar : general view of the site.* *See p. 9*



B. *Dhora Vira : general view of the site.* *See P. 9*



A. Champaner : *excavated remains showing a large structural complex.* *See p. 12*



B. Champaner : *excavated remains showing a residential complex.* *See p. 12*



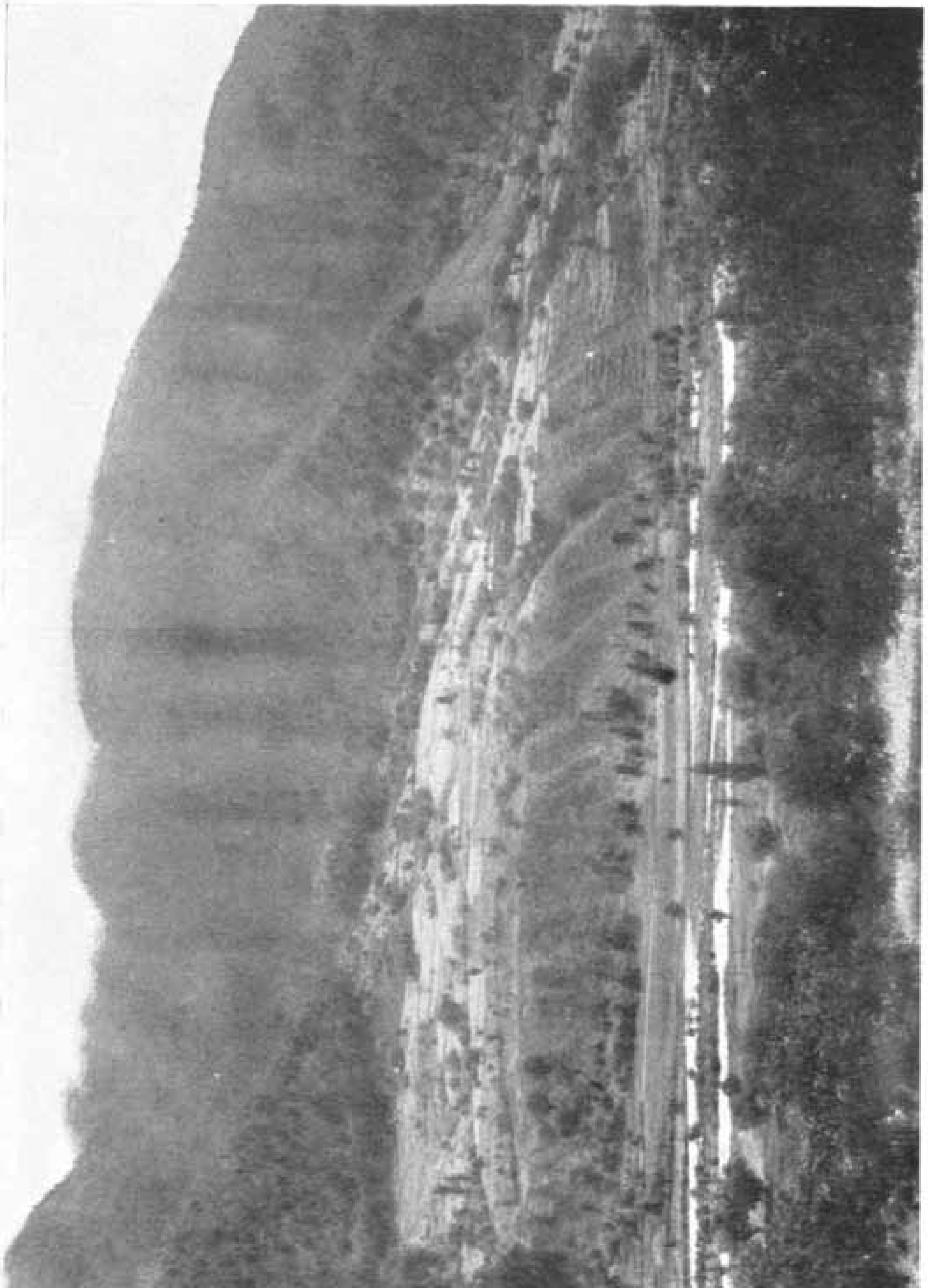
A. *Champaner : details of painted panel on the walls of a room.* *See p. 12*



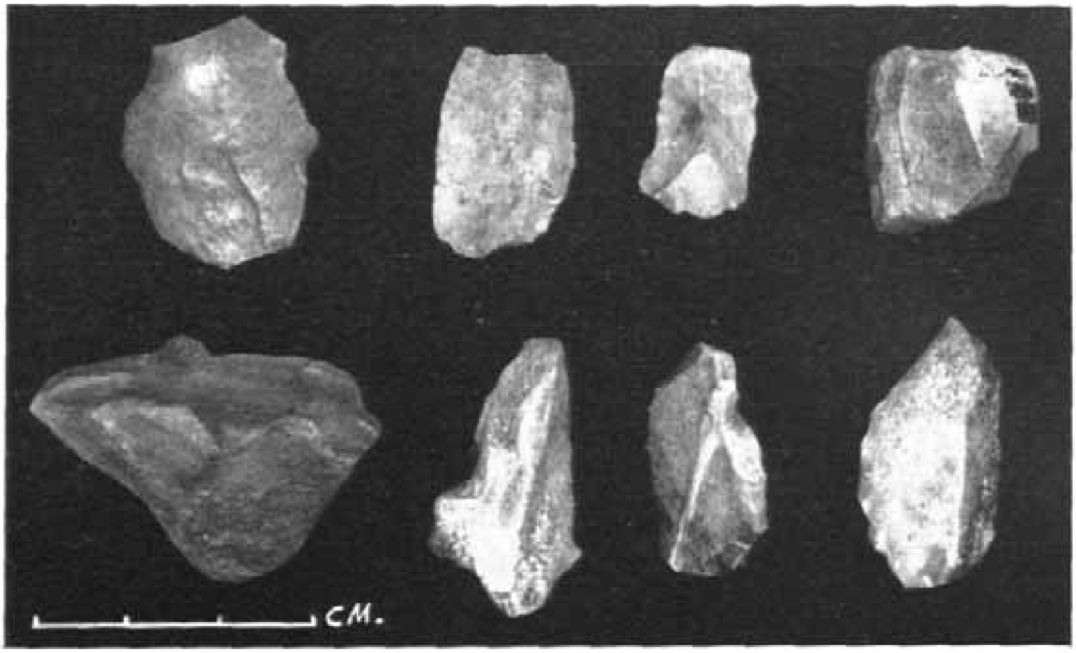
B. *Champaner : details showing the channels in the garden.* *See p. 12*



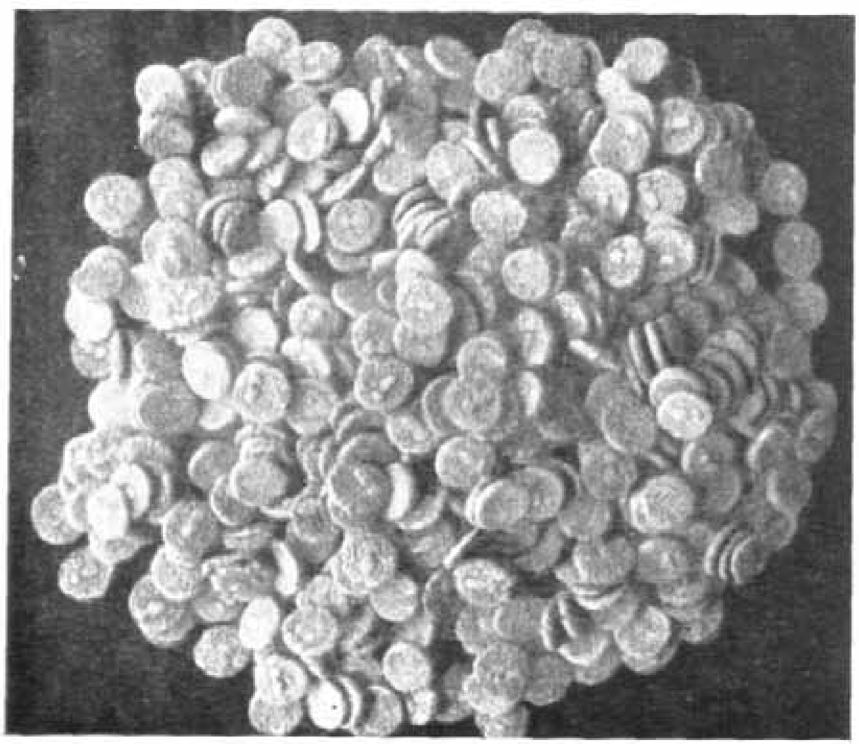
Bawan : section showing screes. See p. 13



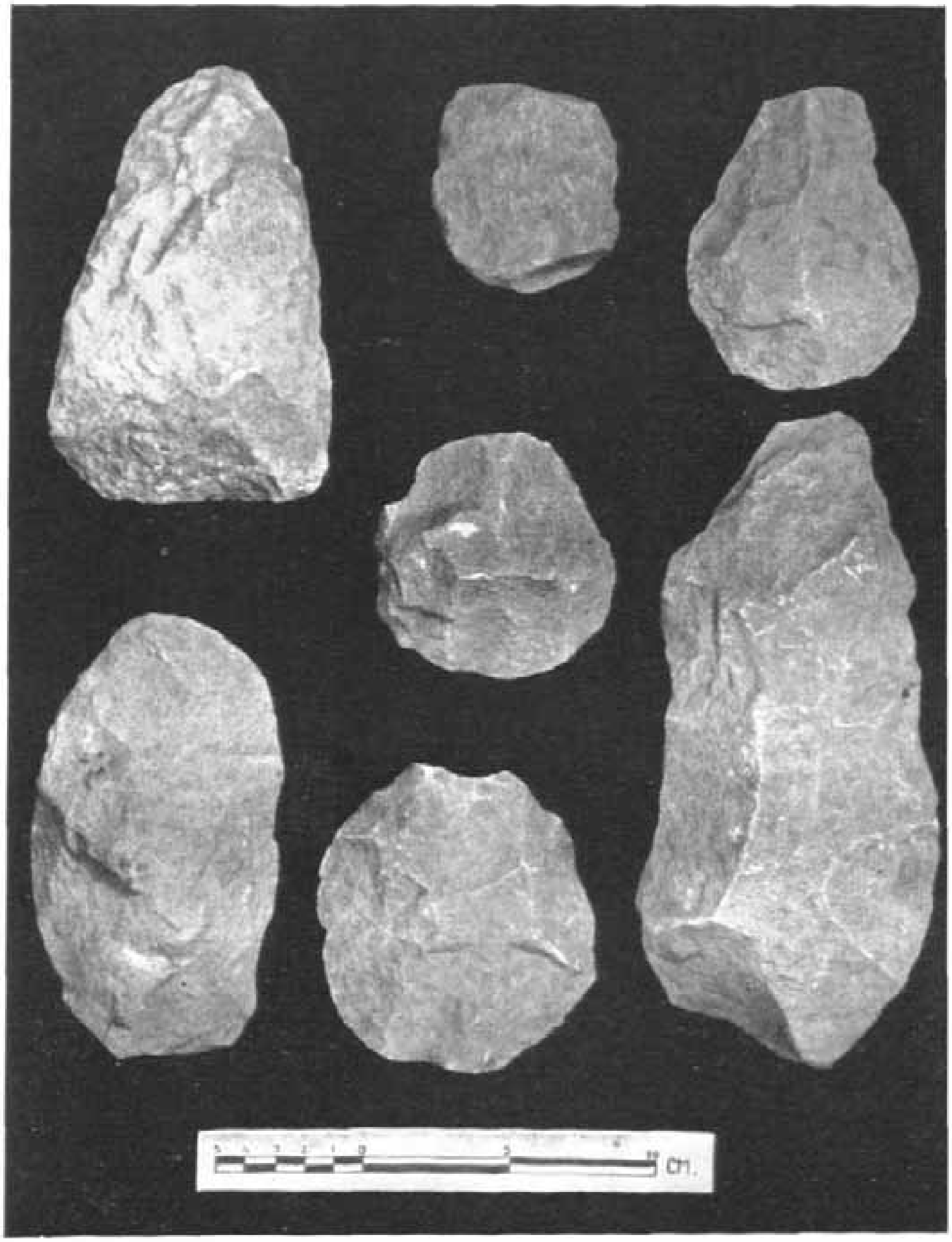
Liddar valley, Kashmir : cone formations near Ganeshpur. *See p. 13*



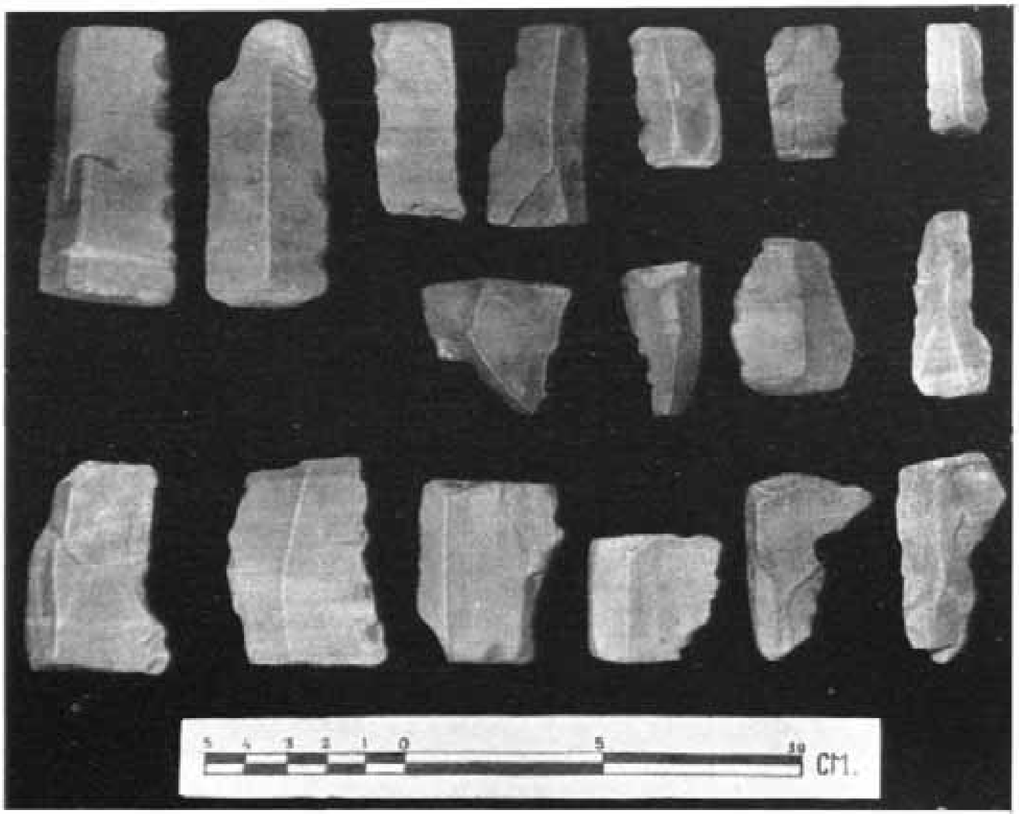
A. *Kotara : Upper Palaeolithic tools.* *See p. 15*



B. *Tumain : hoard of Indo-Sassanian coins.* *See p. 16*



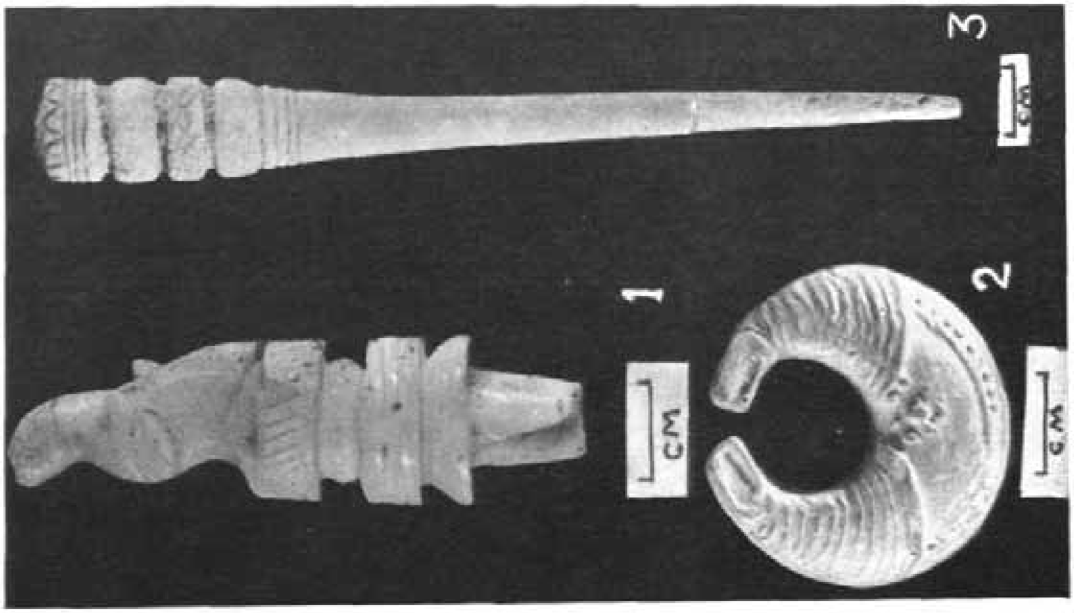
Ghatigaon : Lower Palaeolithic tools. See p. 16



A. *Mahe : Upper Palaeolithic tools. See p. 17*



B. *Bhakardan : general view of the mound. See p. 20*



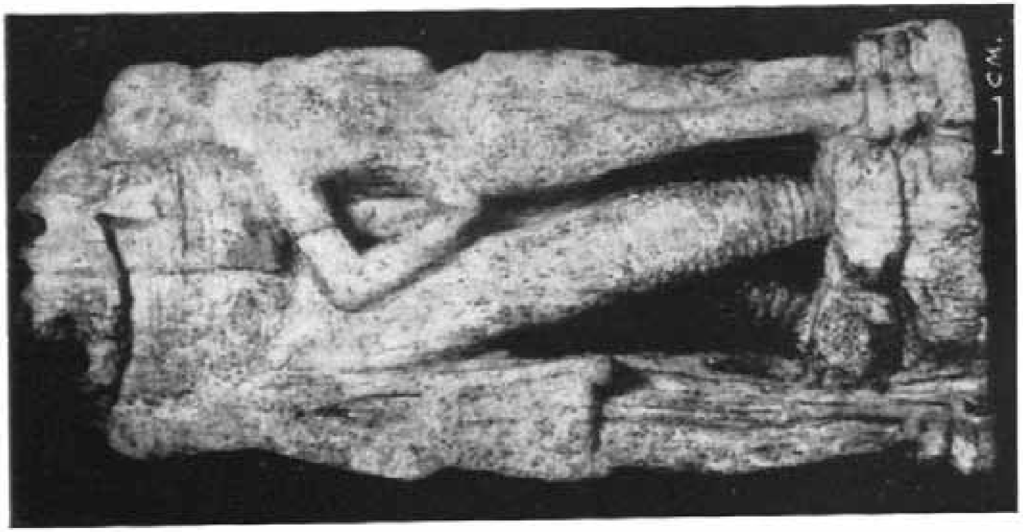
B. *Bhokardan : 1, terminal part of a shell handle showing a bird; 2, terracotta ear-ornament, 3, ivory kohl stick, Satavahana Period.* *See p. 21*



A. *Bhokardan : terracotta bullae, Satavahana Period.* *See p. 21*



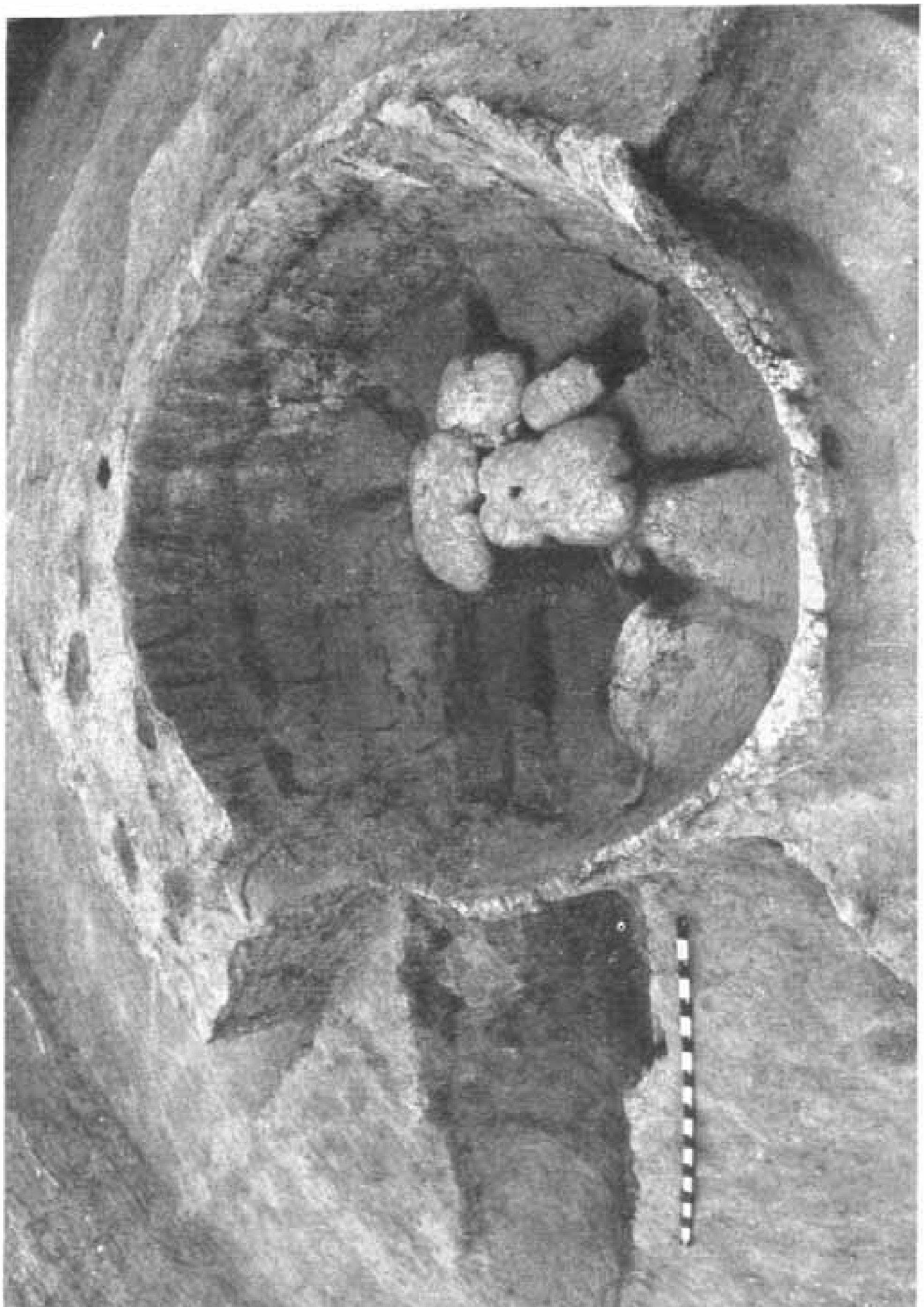
A. Bhakardan : ivory female figurine, front view. See p. 21



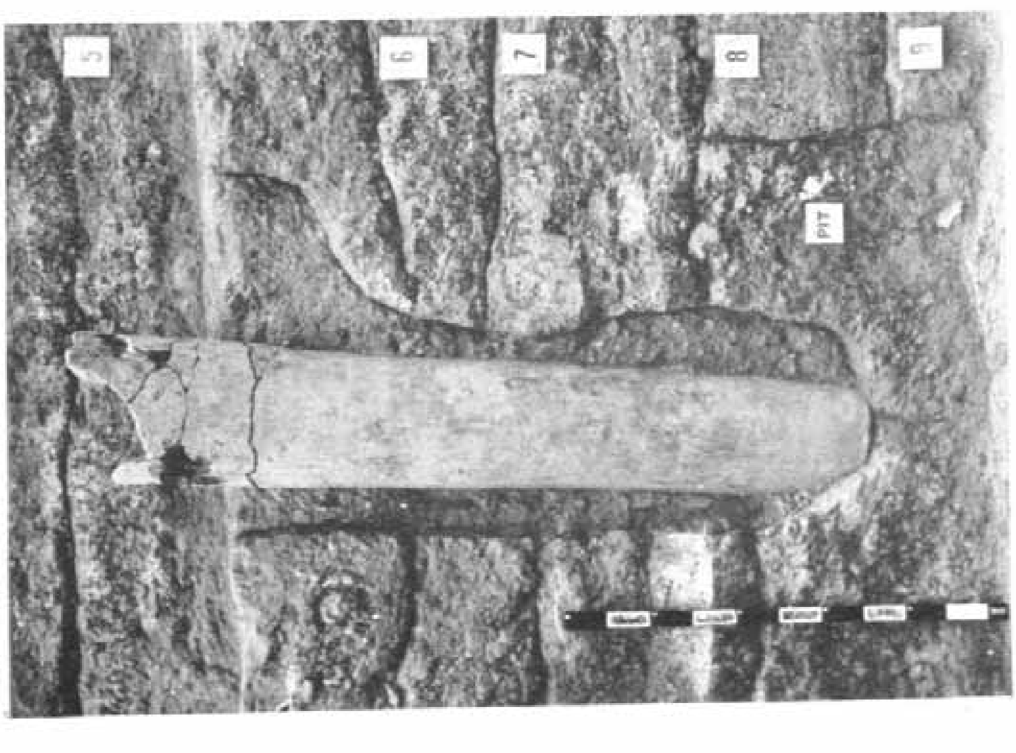
B. Bhakardan : ivory female figurine, back view. See p. 21



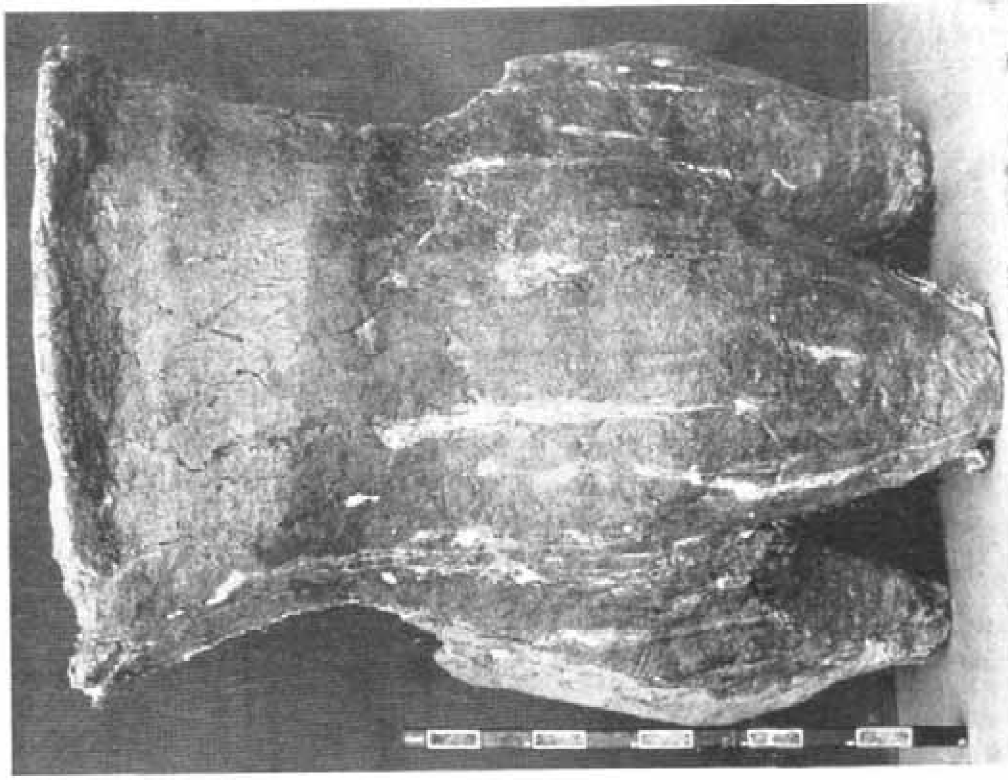
Inamgaon : remains of a house of Period I. *See p. 24*



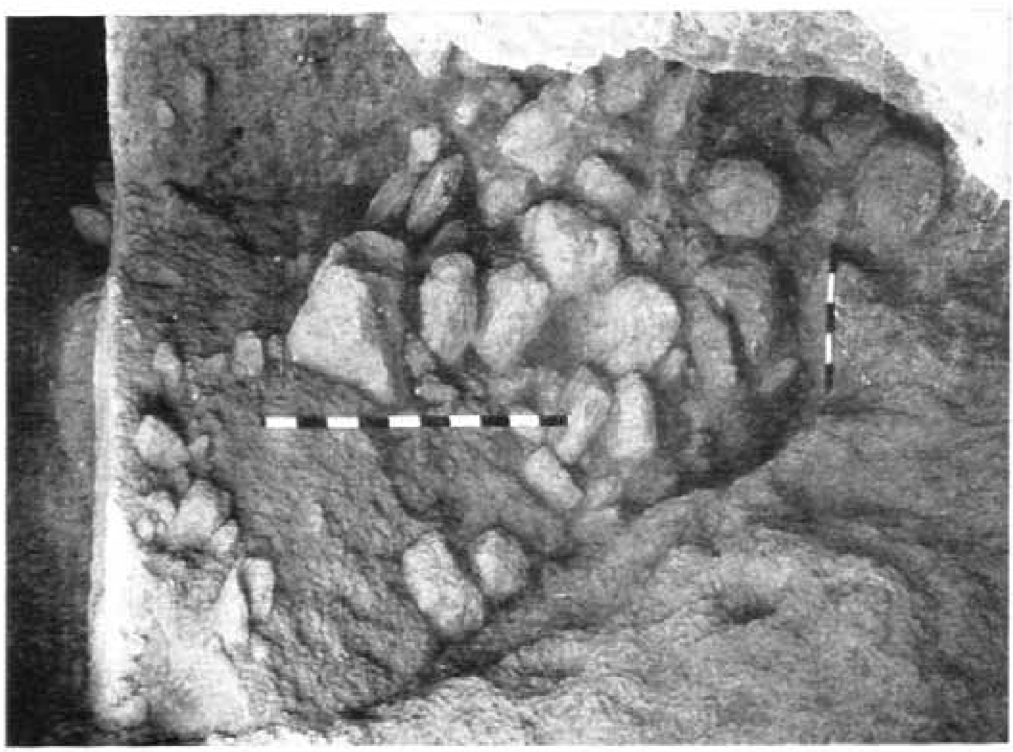
Inamgaon : potter's kiln, Sub-period II A. See p. 24



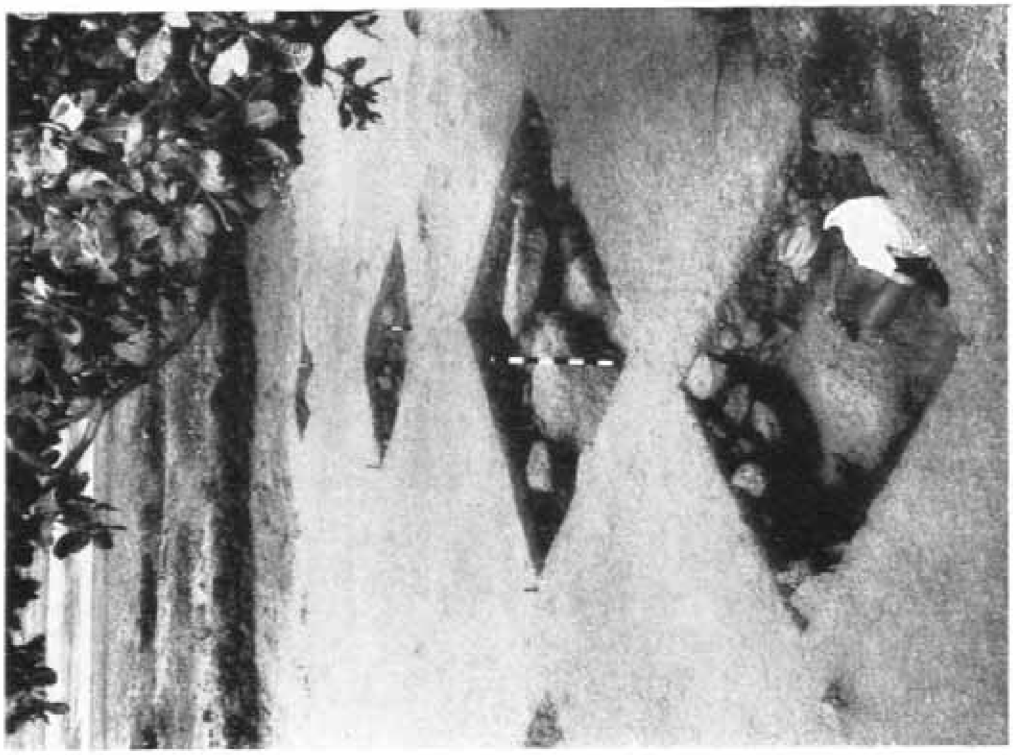
A. Inamgaon : cylindrical jar, Sub-period II B. *See p. 24*



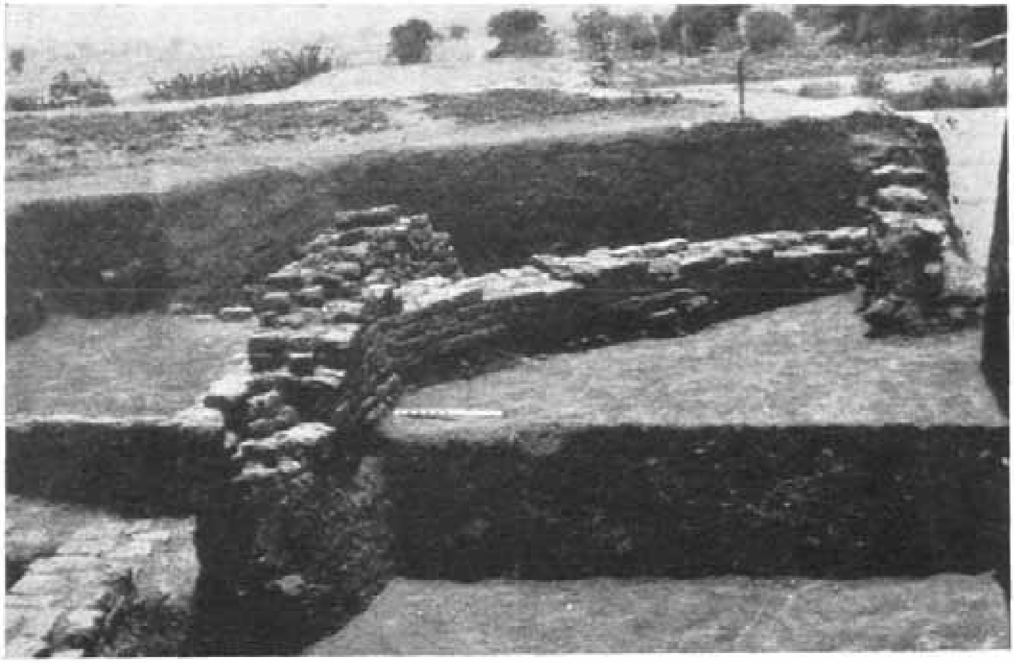
B. Inamgaon : four-legged jar, Sub-period II B. *See p. 24*



A. *Hatkamba* : *close view of the section inside the cave.* *See p. 25*



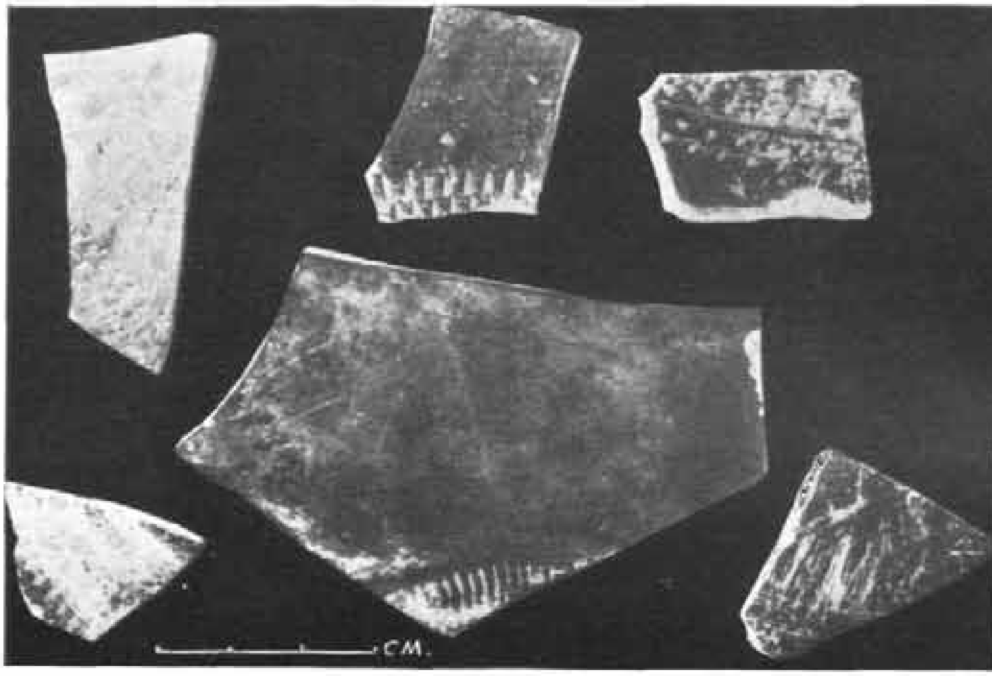
B. *Hatkamba* : *layout of the trenches outside the cave.* *See p. 25*



A. *Vadagaon-Madhavapur : apsidal part of a structure, Satavahana Period.* *See p. 26*



B. *Vadagaon-Madhavapur : excavated remains of a drain, Satavahana Period.* *See p. 26*



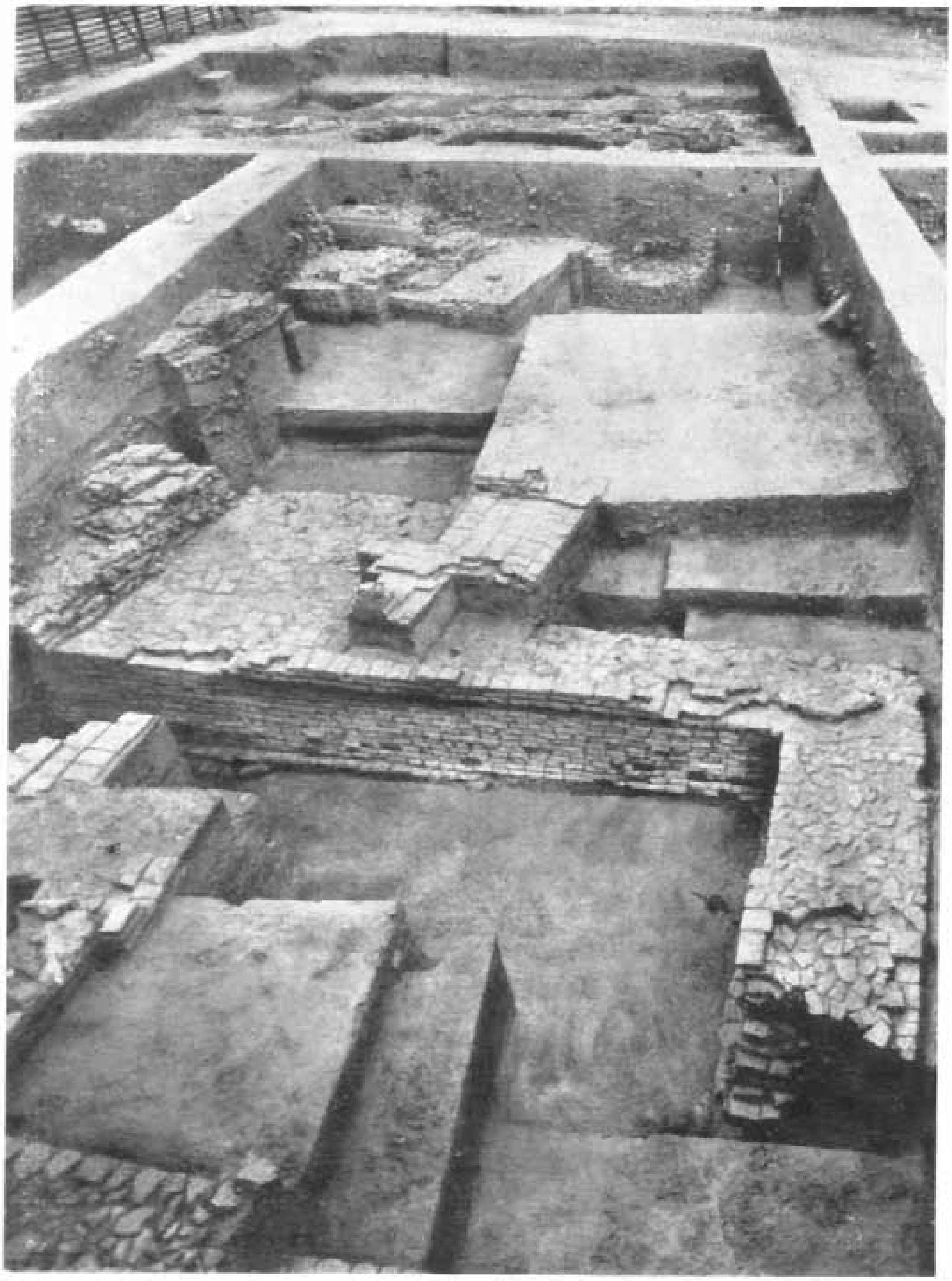
A. *Kanchipuram : sherds of the Rouletted Ware. See p. 30*



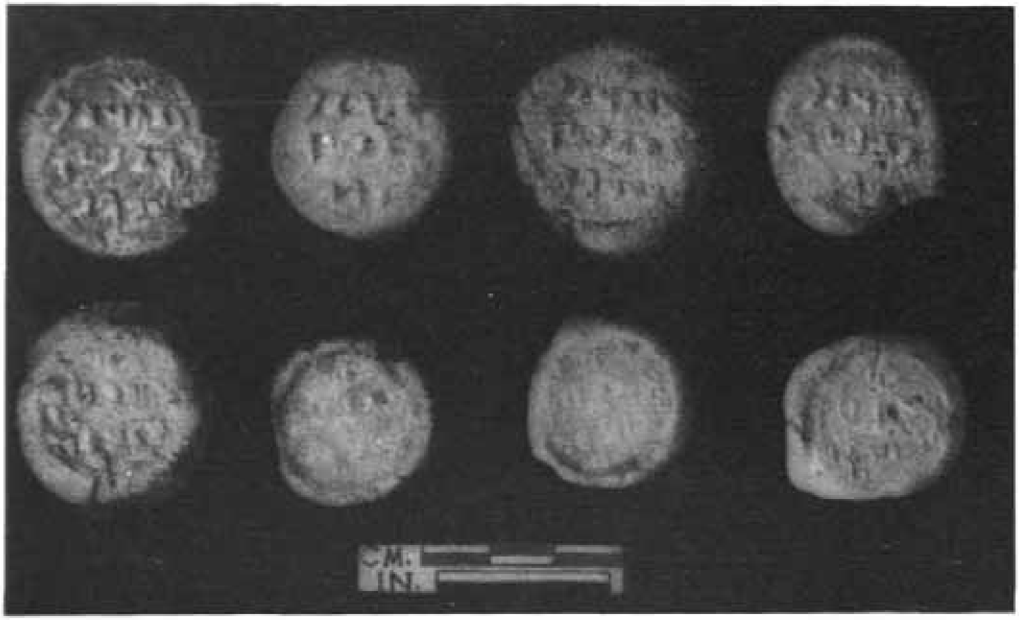
B. *Kanchipuram : terracotta human head. See p. 30*



Kaveripattinam : *excavated remains of a Buddhist vihara.* *See p.* 32



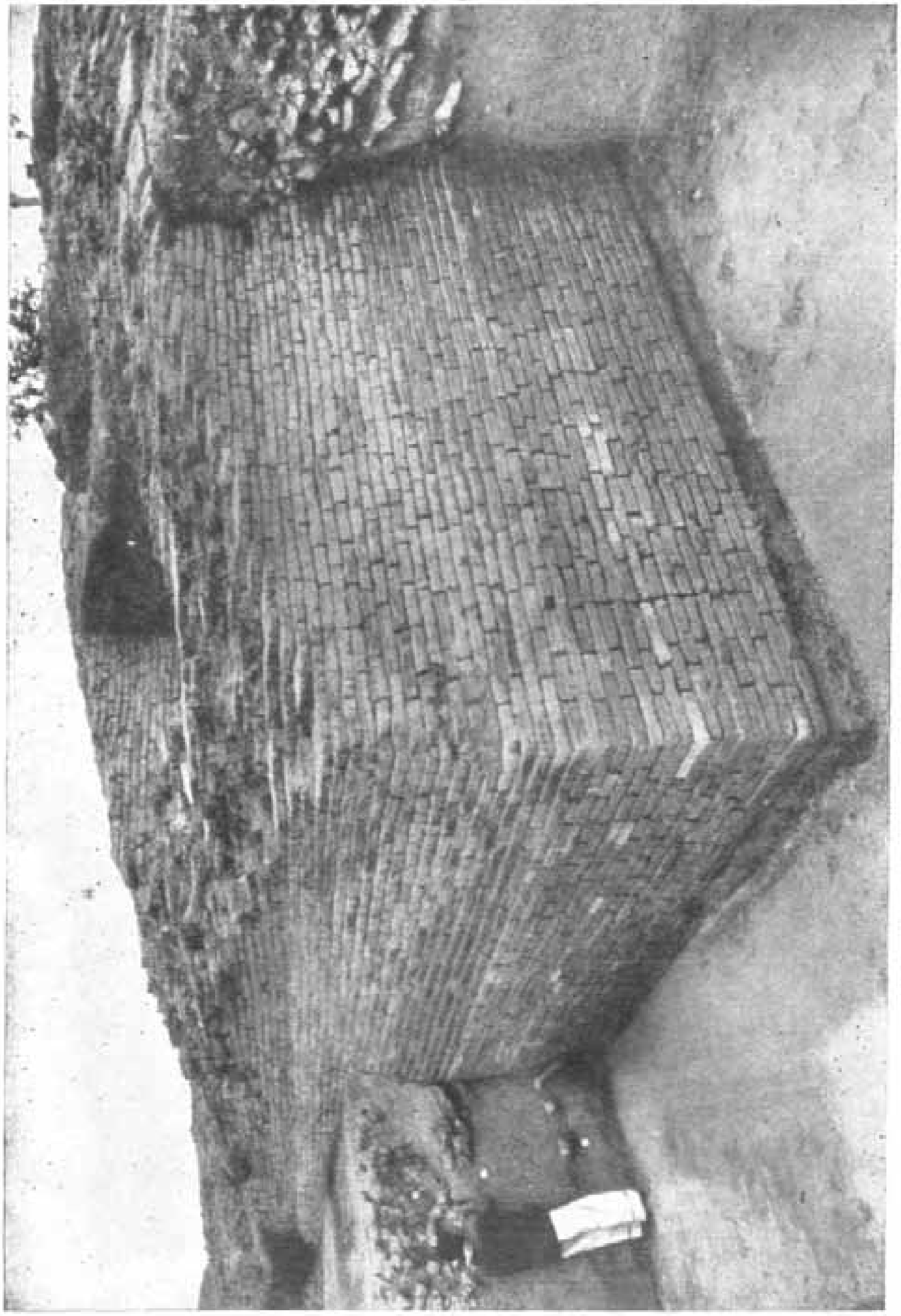
Kaveripattinam : excavated remains of structures south of the vihara. *See p. 32*



A. *Piprahwa : terracotta sealings bearing the name Kapilavastu.* *See p. 33*



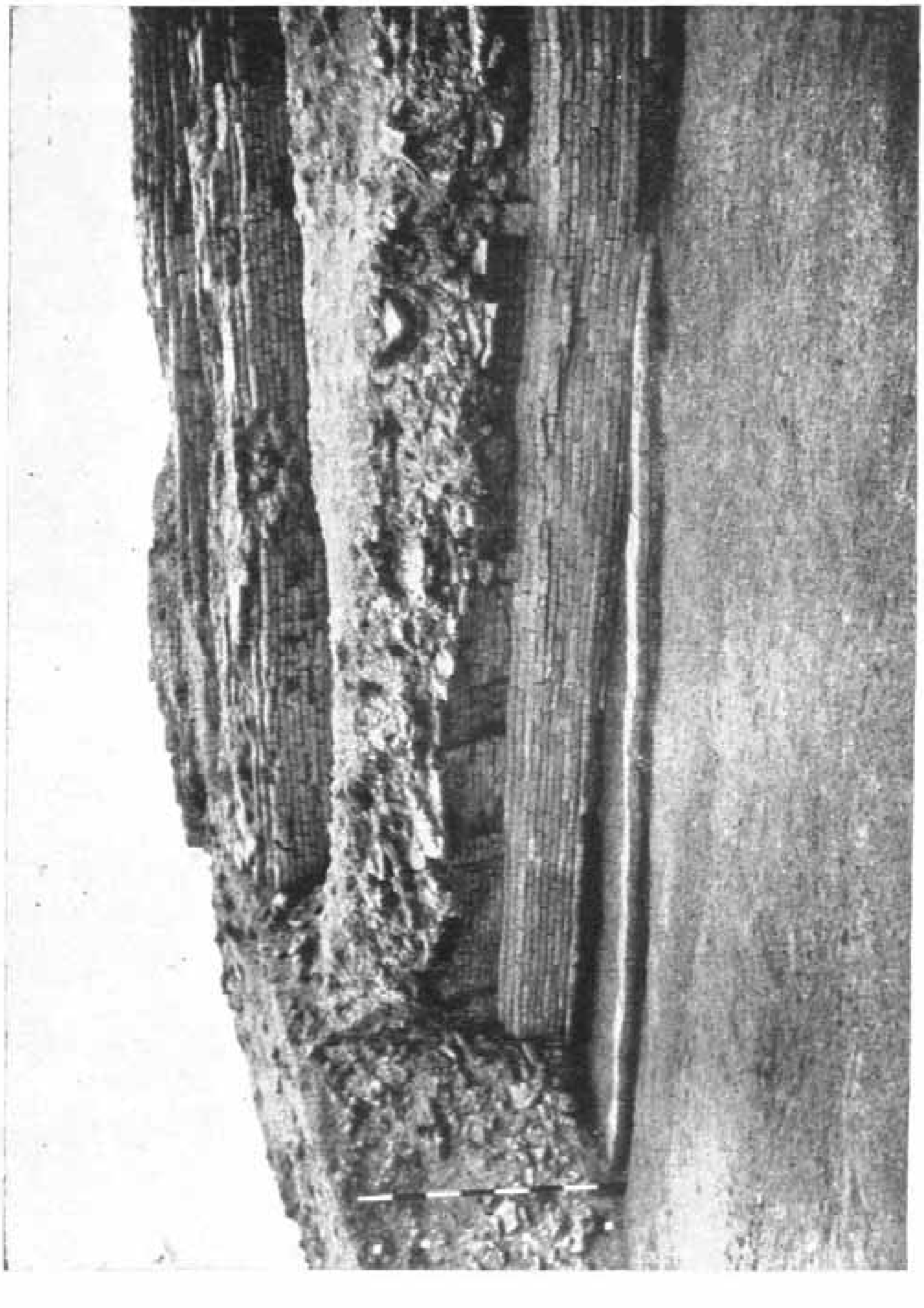
B. *Piprahwa : central hall of the monastery showing the paved flooring.* *See p. 33*



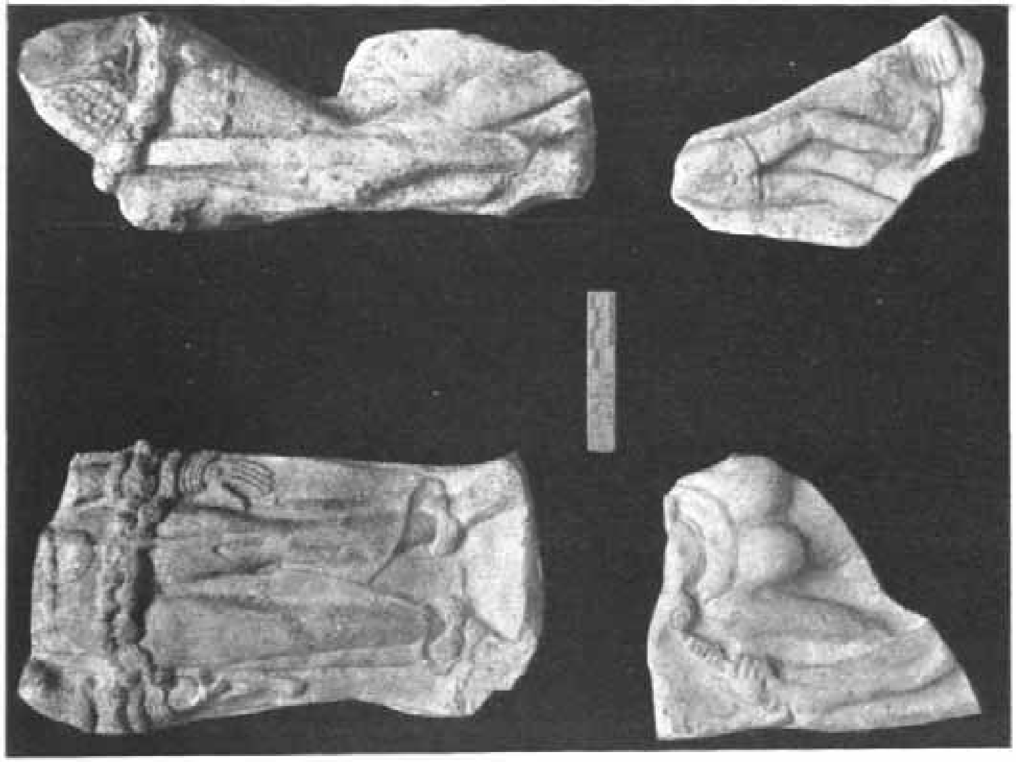
Piprahwa : General view of the monastery. See p. 33



Piprahwa : general view of the stupa, during excavation. *See p.* 33



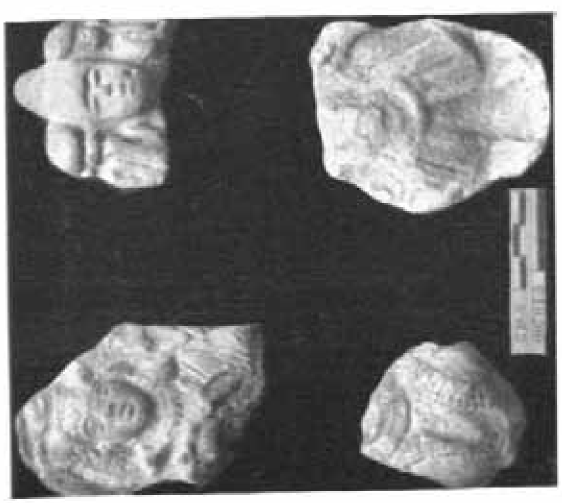
Piprahwa : close view of the section across the stupa. *See p. 33*



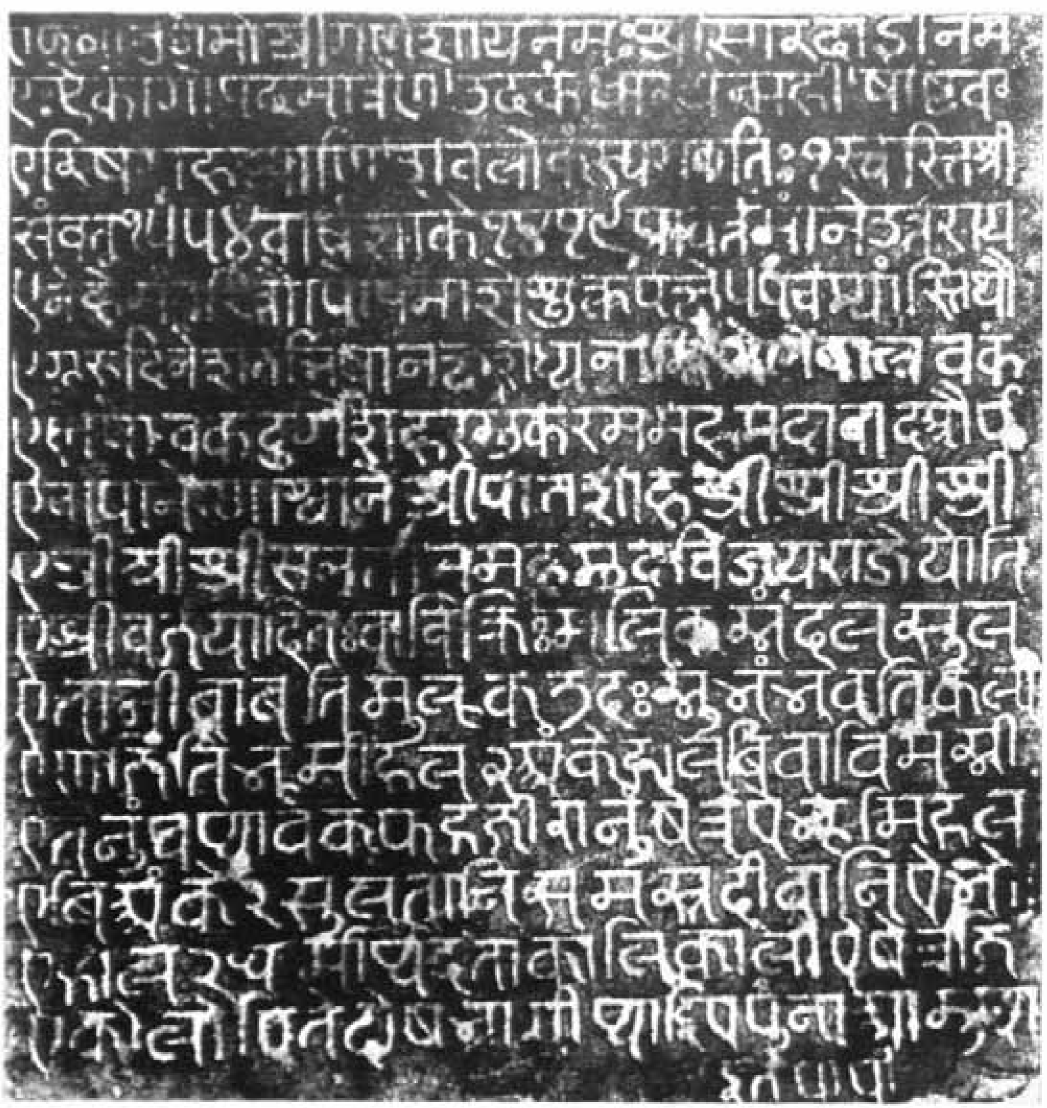
C. *Chandraketugarh : terracotta human figurines.* *See p. 36*



A. *Jiwangarh : inscribed brick.* *See p. 33*



B. *Tamluk : terracotta human figurines.* *See p. 36*



Manavi : step-well inscription. *See p. 40*



B. *Gold coin of Vasudeva from Tehri Garhwal.* *See p. 57*



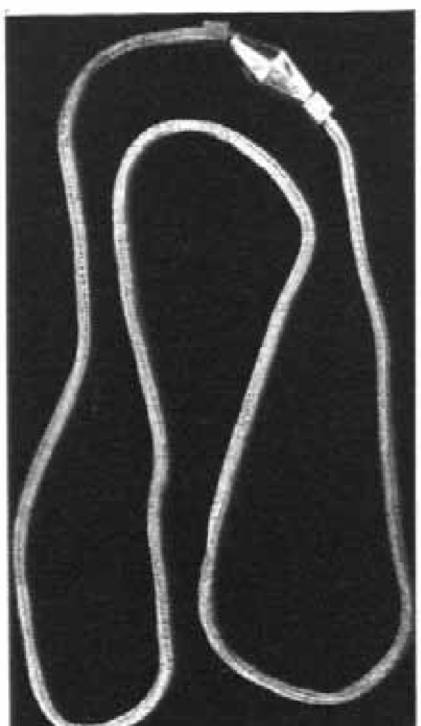
D. *Ear-rings from Tehri Garhwal.* *See p. 57*



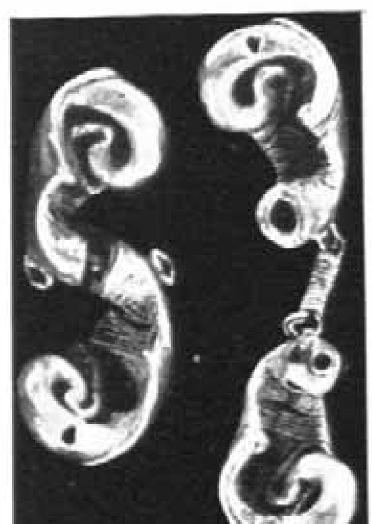
F. *Roman gold coin from Mardakheri.* *See p. 55*



A. *Gold coin of Huvishka from Tehri Garhwal.* *See p. 57*



C. *Gold chain from Tehri Garhwal.* *See p. 57*



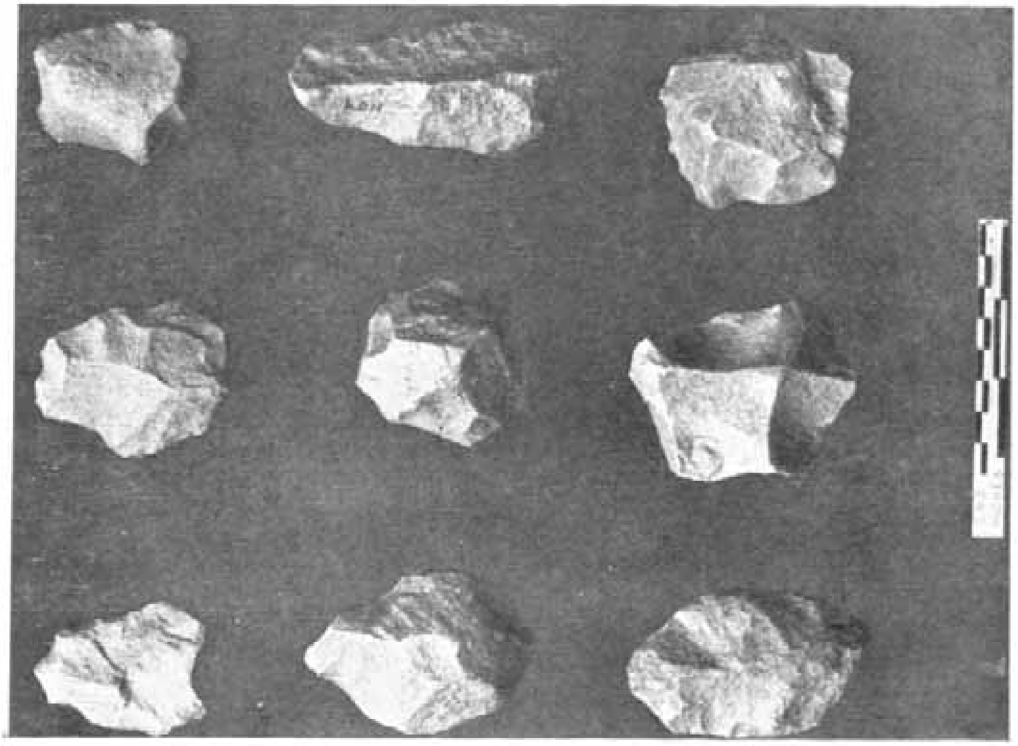
E. *Ear-rings from Tehri Garhwal.* *See p. 57*



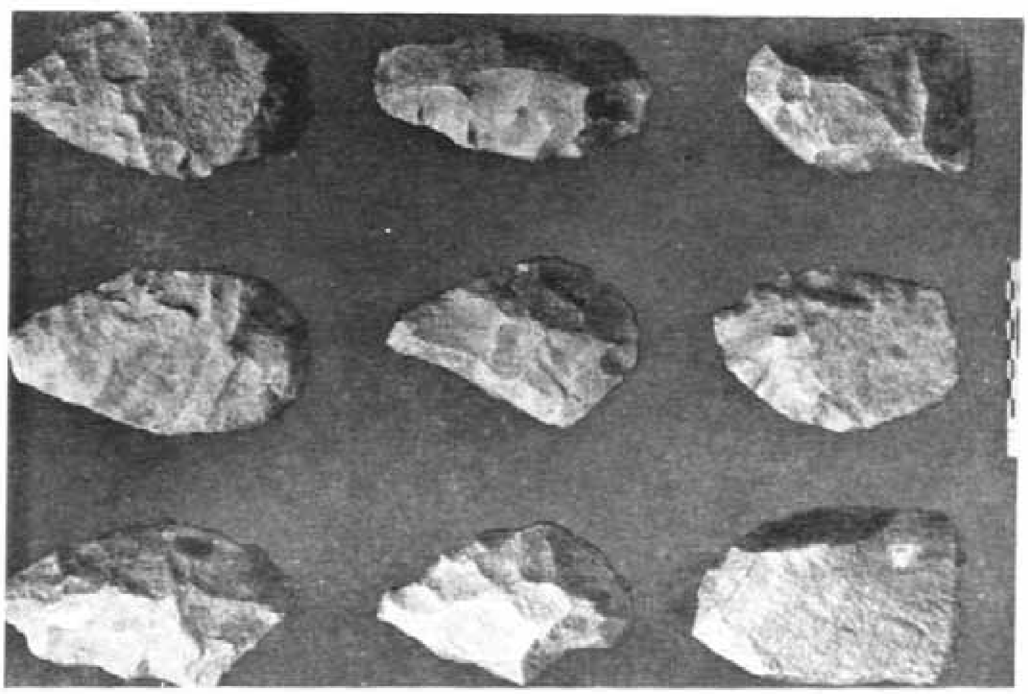
A. Inscribed image of Parvati from Dhar. *See p. 58*



B. Image of Jhambhala from Nagpur. *See p. 59*



B. *Kaduaha : Middle stone Age tools. See p. 59*



A. *Kaduaha : Early stone Age tools. See p. 59*



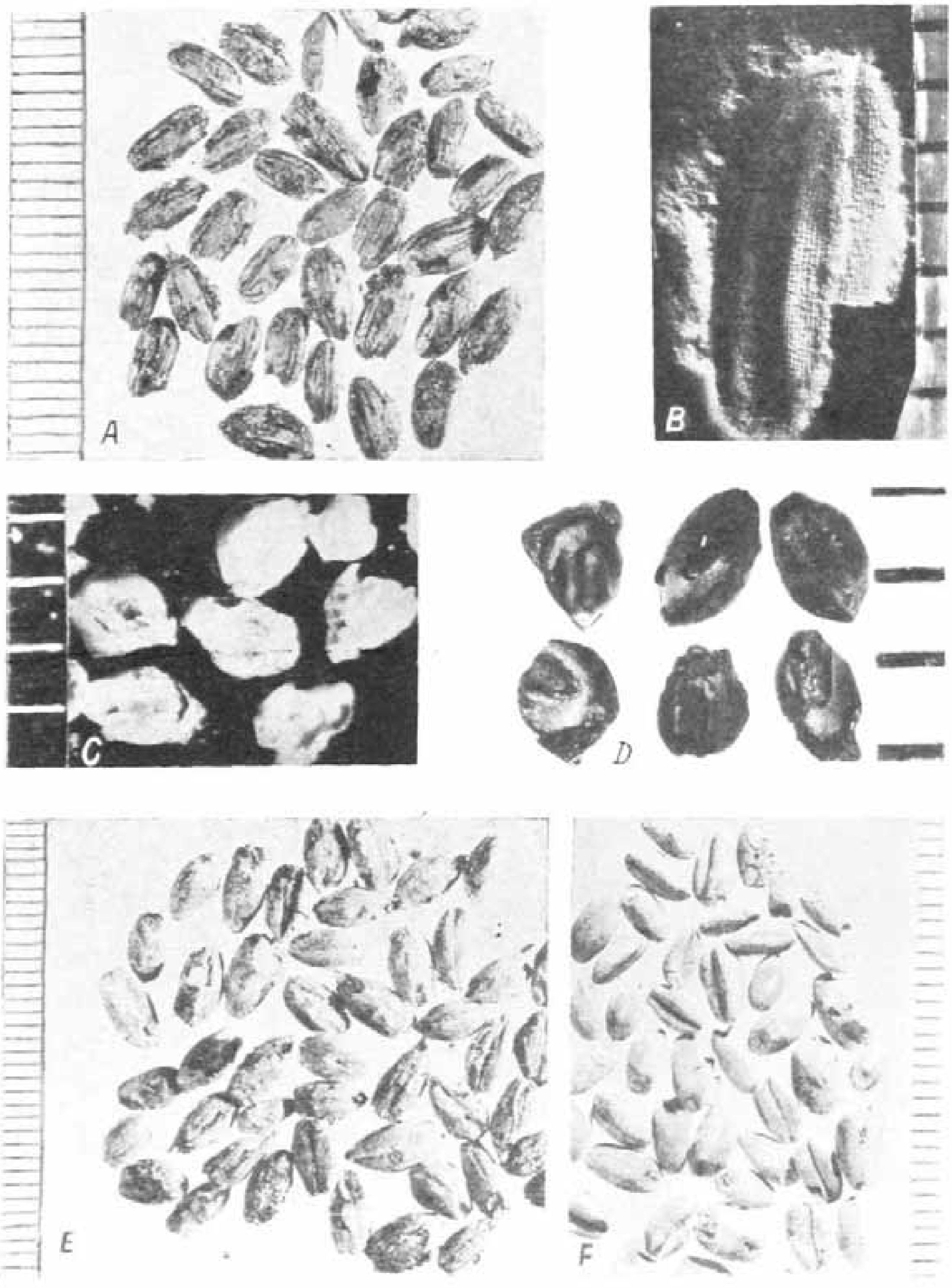
A. *Gulgaon : images of Naga and Nagini.* *See p. 59*



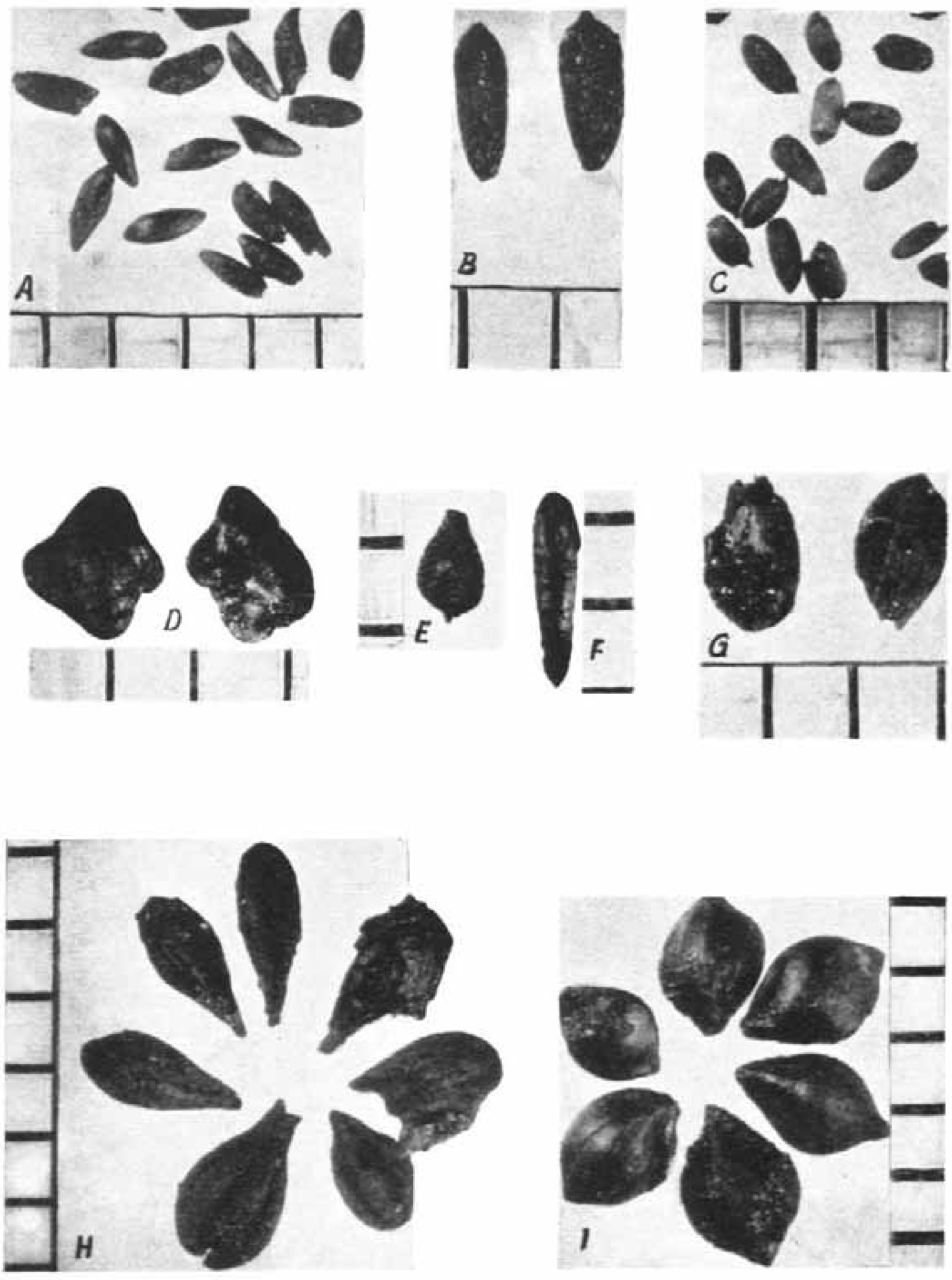
B. *Gulgaon : image of Parsvanatha* *See p. 59*



Malangi : image of Kali in bronze. *See p. 60*



A. Carbonized spikelets of oryza sativa L. *from Noh;* B, *rice spikelet (carbonized O. sativa) from Noh;* C, *carbonized seeds of Sarghum spp. from Inamgaon;* D, *carbonized seeds of setaria italica and Setaria Viridis from Surkotada;* E, *carbonized hulled form of barley (Hordeum spp.) from Noh;* F, *carbonized wheat grains from Chanhu-daro.* *See pp. 67 and 68*



Surkotada : A, *carbonized seeds of wild grass; B and* C, *carbonized seeds of wild grass (Erio phorum spp.)*; D, *carbonized seeds of Euphorbia spp*; E, *carbonized seeds of Sirpus supinies*; F. *carbonized seeds of another wild grass* ; G, *carbonized seeds of carex spp.* *See p. 67*



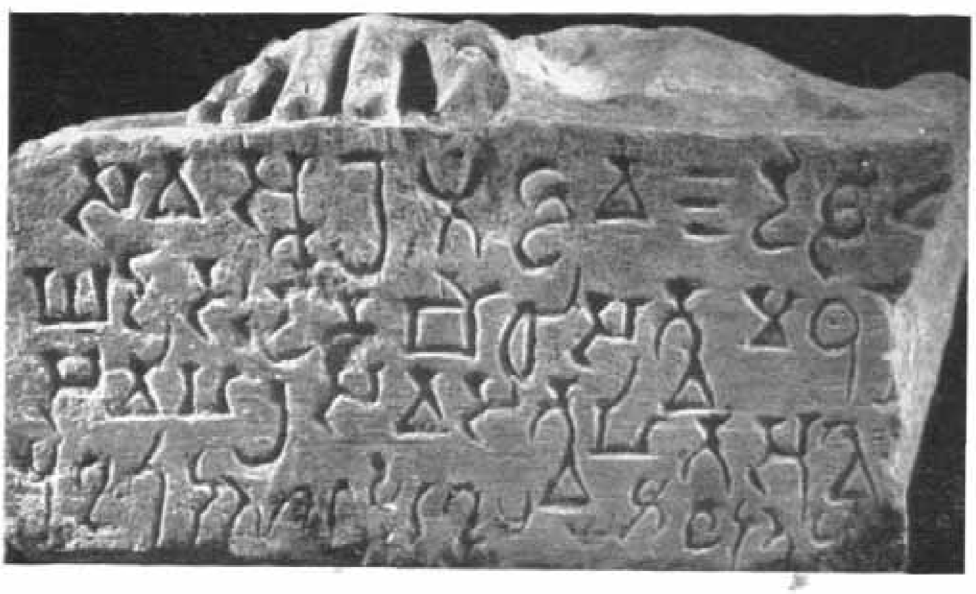
A. *Carbonized seeds of Dolichos biflorus* L. *from Inamgaon* ; B, *carbonized seeds of lentil from Inamgaon*; C, *carbonized seeds of Phaseolus mungo from Noh* ; D, *carbonized seeds of beans* (*Phaseolus vulgaris*) *from Inamgaon*; E, *carbonized seeds of Vicia spp. from Inamgaon*; F, *carbonized nuts of Zizyphus nummalaria from Inamgaon*; G, *carbonized shell* (*broken*) *and seed of Buchanania spp. from Inamgaon* ; H, *carbonized seeds of Atriplex sp. from Surkotada* ; I, *carbonized seeds of Polygonun spp. from Surkotada*; J, *carbonized seeds of Trifoluim from Surkotada* *See pp. 67 and 68*



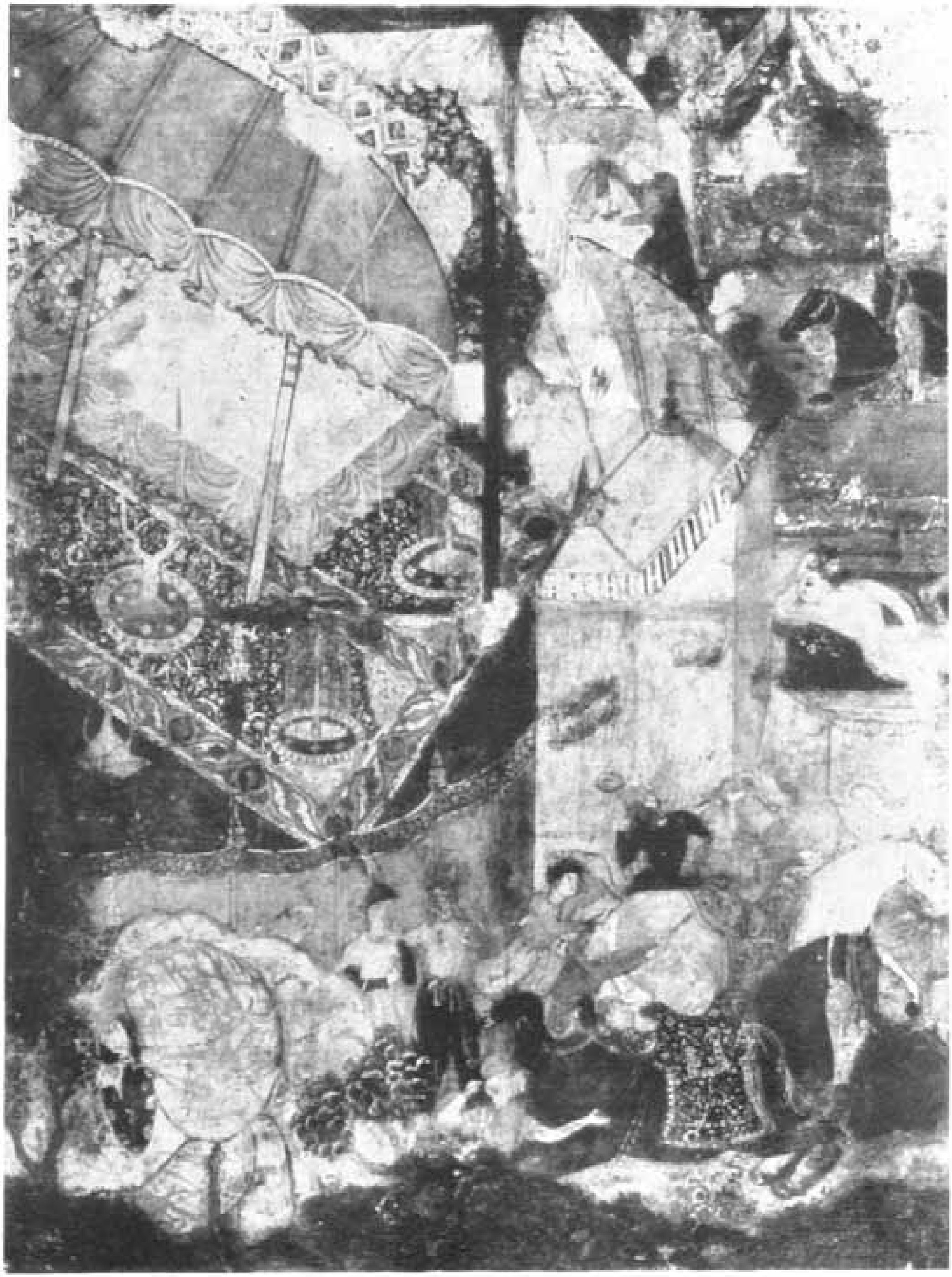
Archaeological Gallery of West Bengal, Calcutta : A, image of Jain Tirthankara Rishabhnath. B, image of Gauri and C, image of Surya. *See p. 70*



A. *Archaeological Gallery, West Bengal, Calcutta: image of Vishnu.* *See p. 70*



B. *Archaeological Museum Mathura : inscribed pedestal, Kushan period.* *See p. 72*



National Museum, New Delhi : illustrated folio of Hamzanama. See p. 73

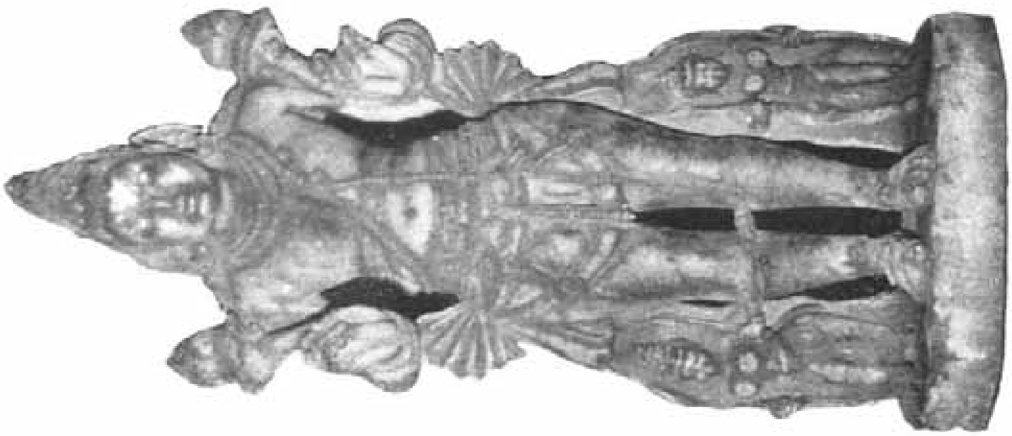




Museum and Picture Gallery Vadodara : A, *four-armed deity from Mathura* ; B, *black terracotta plaque with vighnantaka.* *See p. 74*



A. *Image of Vaishnavi in Ganapati shrine Ullal.*
See p. 76



B. *Image of Surya in Panchalingesvara temple Barkur. See p. 78*



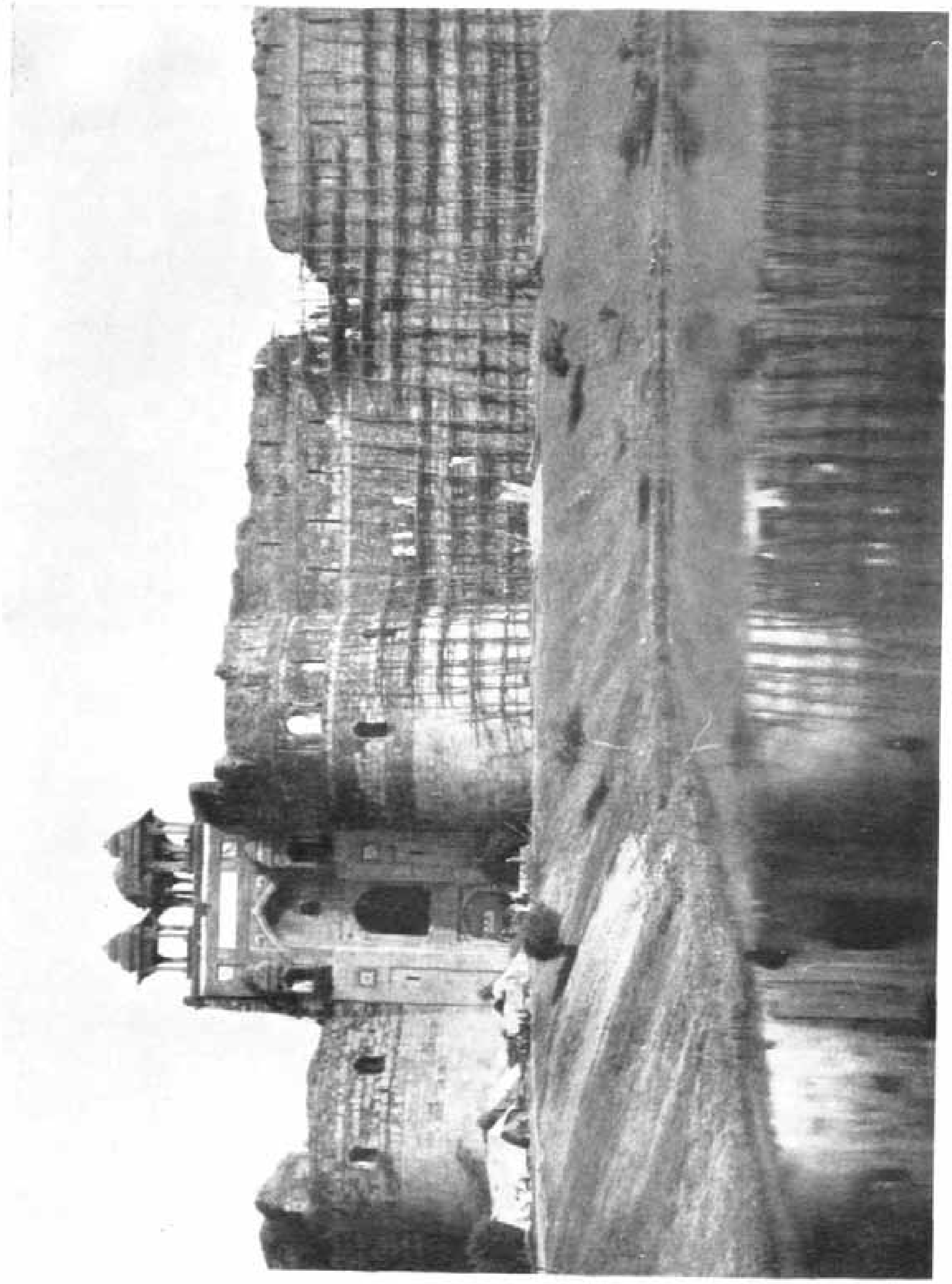
Vadarse : general view of Mahalingesvara temple. *See p. 78*



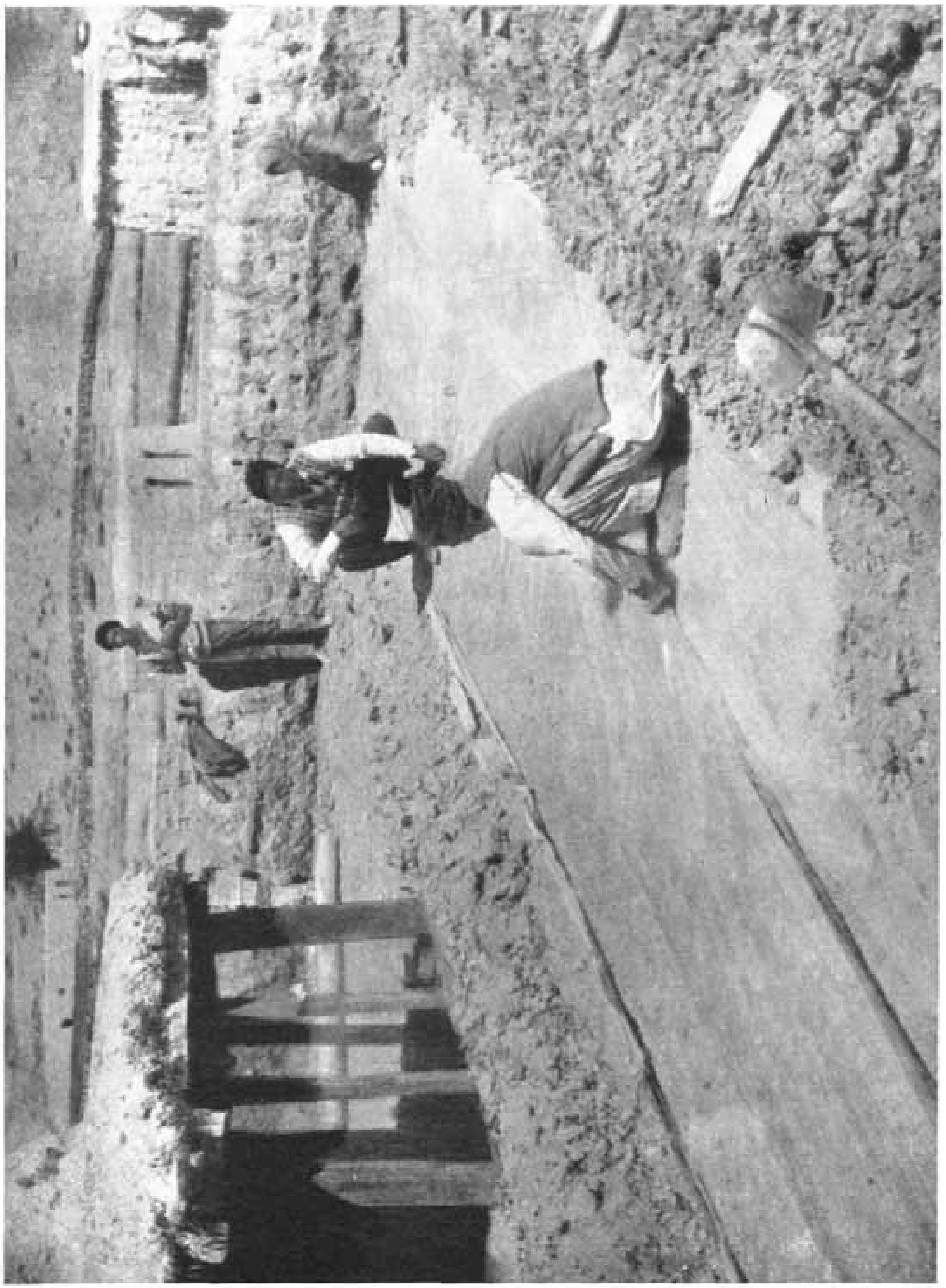
A. *Delhi : Purana Qila, before repairs.* *See p. 84*



B. *Delhi : Purana Qila, after repairs.* *See p. 84*



Delhi : Purana Qila, during repairs. *See p. 84*



Tabo : Buddhist monastery, during repairs, water proofing the roof. *See p. 84*



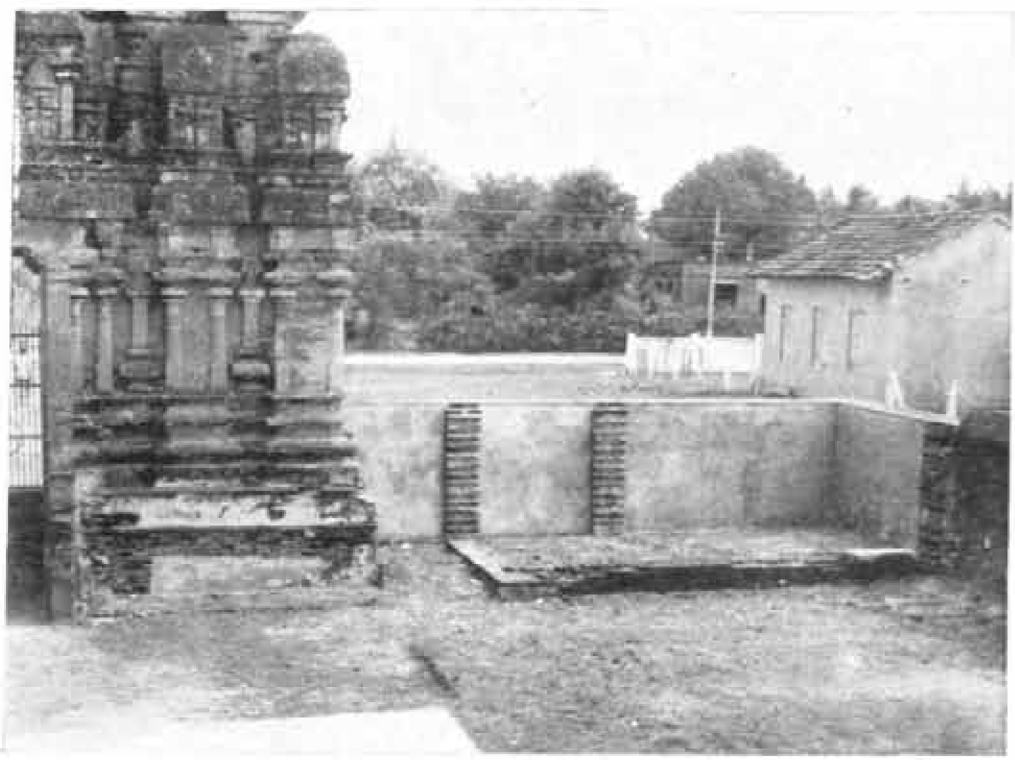
A. *Tabo : Buddhist monastery, before conservation.* *See p. 84*



B. *Tabo : Buddhist monastery, after conservation.* *See p. 84*



A. *Nedungadu : Siva temple, before conservation. See p. 86*



B. *Nedungadu : Siva temple, after conservation. See p. 86*



Thanjavur : Brihadisvara temple, during conservation. *See p. 87*



A. *Kantivas : group of temples, before conservation.* *See p.* 95



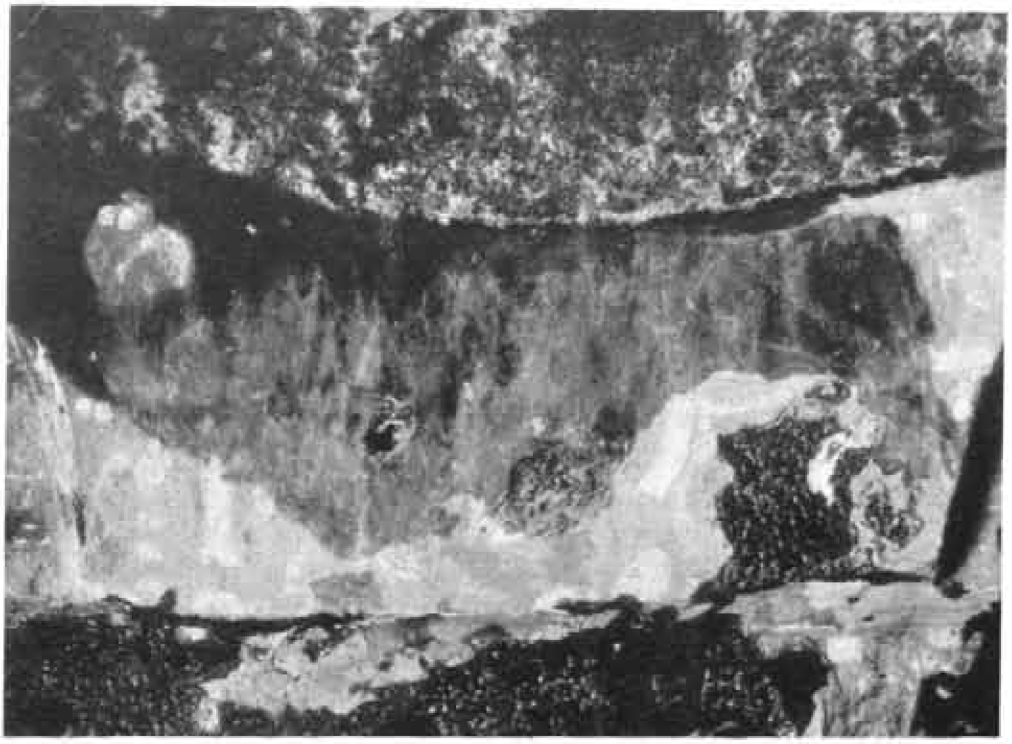
B. *Kantivas : group of temples, after conservation.* *See p.* 95



A. *Bamiyan, Afghanistan : painted panels in cave 2, before chemical treatment.* *See p. 98*



B. *Bamiyan, Afghanistan : painted panels in cave 2, after chemical treatment.* *See p. 98*



A. *Bamiyan, Afghanistan : painted panels in the main niche, before chemical treatment.* *See p. 98*



B. *Bamiyan, Afghanistan : painted panels in the main niche, after chemical treatment.* *See p. 98*

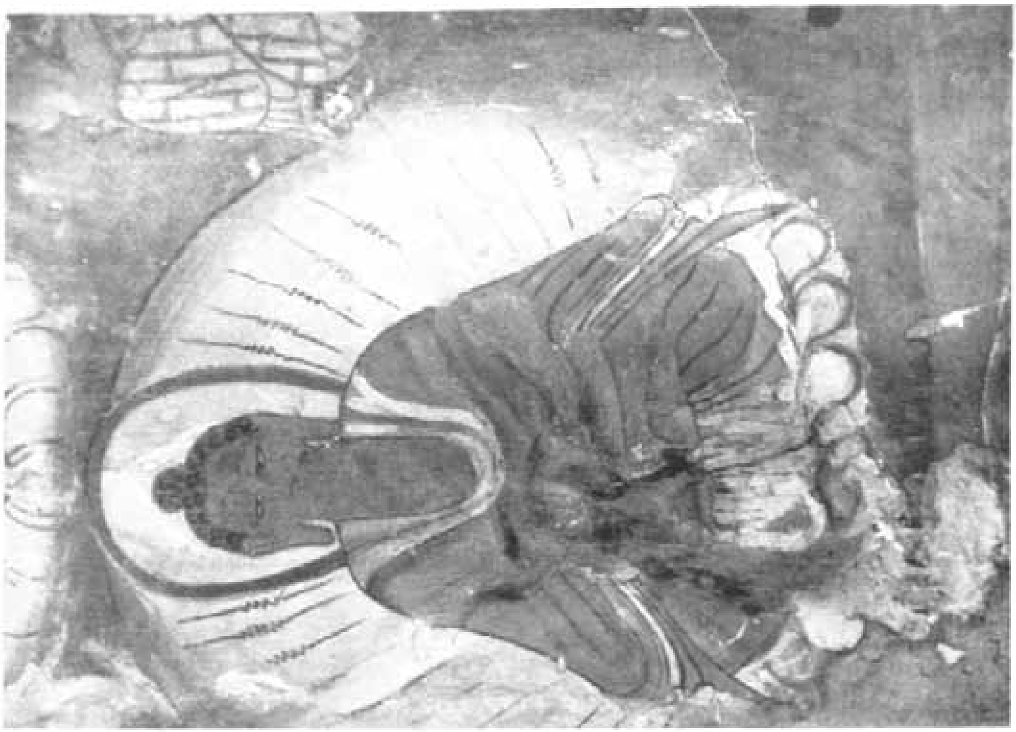


Bamiyan, Afghanistan : painted panels in cave 15, during conservation. *See p. 98*





Bamiyan, Afghanistan: stucco figures in cave 14, A, before chemical treatment and B, *after chemical treatment.* *See p. 98*





Tabo : Duwong Gumpha, painted panel, A, before chemical treatment and B, after chemical treatment. *See p. 100*





Khajuraho : Vishwanath Temple, part of the sculptured panel, A, *before chemical treatment and* B, *after chemical treatment.* *See p. 100*



A. *Bishnupur : Madan Mohan Temple, before chemical treatment.* *See p. 104*



B. *Bishnupur : Madan Mohan Temple, after chemical treatment.* *See p. 104*